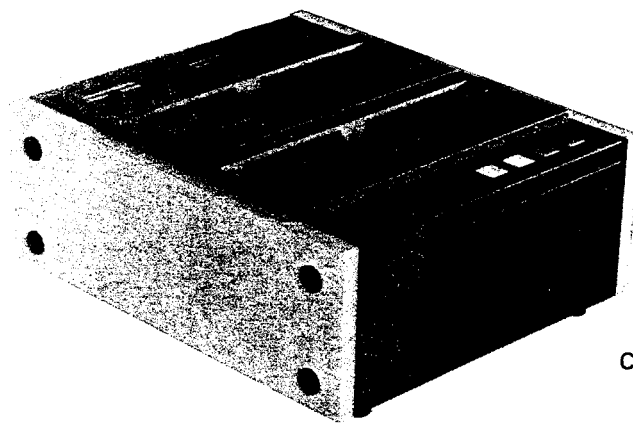
SONY

AUDIO CASSETTE DUPRICATOR

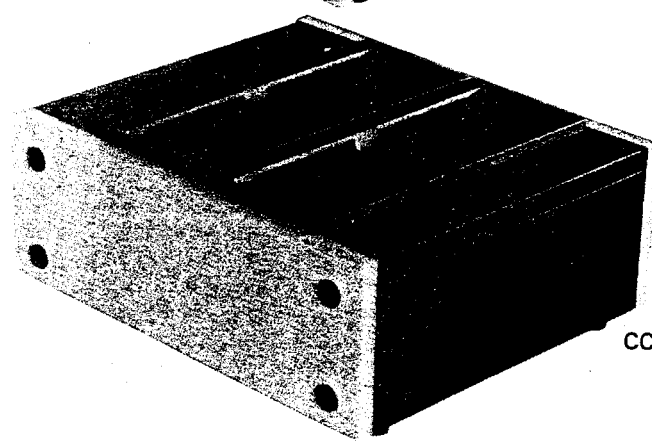
CCP-2300

CCP-2400

SERVICE MANUAL



CCP-2300



CCP-2400

SPECIFICATIONS

Power requirements	120 V AC, 60 Hz
Power consumption	0.74 A
Recording system	4-track 4-channel /4-track 2-channel
Tape cassette	Normal TYPE I cassette (C-30, C-46, C-60, C-90) (TYPE II and TYPE IV tapes not usable)
Tape speed	76 cm/s (30 ips)
Copy time	Approx. 2 min. (with C-60 cassette) (per run)
Rewind time	Approx. 45 sec. (with C-60 cassette)
Frequency response	40 – 12,500 Hz
Recording bias frequency	Approx. 600 kHz
Signal to noise ratio	50 dB, Peak level recording (NAB-A, WRMS)
Total harmonic distortion	Within 3%
Wow and flutter	Less than 0.23% (WRMS)
Crosstalk	Better than 52 dB (between track 2 and 3, at 1 kHz)
Drive control connector	CCP-2300: Output (13-pin DIN) CCP-2400: Input (13-pin DIN), Output (13-pin DIN)
Dimensions	Approx. 328 × 160 × 382mm (w/h/d) (13 × 6 3/8 × 15 1/8 inches) not including projecting parts and controls
Weight	Approx. 10.2 kg (22 lb 8 oz)
Accessories supplied	AC power cord (1) Head cleaning tip (1 set) Dust cover (1) Control cable with 13-pin DIN connectors (1, supplied with the CCP-2400 only) Operating Instructions

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

Section	Title	Page
1.	**GENERAL**	
1-1.	Features	1-1
1-2.	Location and Function of Controls	1-2
	CCP-2300	1-2
	CCP-2400	1-3
1-3.	Preparation	1-4
1-4.	Duplication	1-7
2.	**DESCRIPTION**	
2-1.	Operation State	2-1
	CCP-2300 Audio (Copy A Mode)	2-1
	CCP-2300 Audio (Copy A + B Mode)	2-3
	CCP-2300 Control Stop → Copy	2-5
	CCP-2300 Control Stop → Rew	2-7
	CCP-2400 Audio (Copy A Mode)	2-9
	CCP-2400 Audio (Copy A + B Mode)	2-11
	CCP-2400 Control Stop → Copy	2-13
	CCP-2400 Control Stop → Rew	2-15
2-2.	Capstan Assembly	2-17
2-2-1.	Speed Lag between Original MD and Copy MD	2-17
2-2-2.	Kind and Arrangement of Capstan Assemblies	2-17
2-2-3.	Identification and Dimension of Capstan Assemblies	2-17
2-2-4.	When Eliminating Speed Lag between Original and Copy	2-18
2-3.	Reel Head Assembly Position	2-18
2-4.	Assembly of Capstan Motor and Motor Pulley	2-18
2-5.	Electrical Circuit	2-19
3.	**SERVICE INFORMATION**	
3-1.	Disassembly	3-1
3-2.	Head Replacement	3-3
3-3.	Cleaning Mode	3-3
3-4.	Service Mode	3-3
4.	**ADJUSTMENT**	
4-1.	Adjustment of Plunger Stroke	4-1
4-2.	Replacement of Electrostatic Brush	4-1
4-3.	Head Highit Adjustment	4-1
4-4.	Head Azimuth Adjustment	4-2
4-5.	Adjustment of Playback Level (CCP-2300 only)	4-5
4-6.	Adjustment of Frequency Charactaristics (CCP-2300 only)	4-5
4-7.	Bias Frequency Adjustment (CCP-2300, 2400)	4-6
4-8.	Bias Trap Adjustment (CCP-2300, 2400)	4-6
4-9.	Bias Current Pre-Adjustment (CCP-2300, 2400)	4-7
4-10.	Adjustment of Erase Head Dummy Coil (CCP-2300, 2400)	4-7
4-11.	Adjustment of Record Level and Frequency Characteristics	4-8
5.	**SEMICONDUCTORS**	5-1
	(CCP-2300)	
6.	**CCP-2300 DIAGRAMS**	
6-1.	Block Diagram (Audio)	6-1
6-2.	Block Diagram (System)	6-3
6-3.	Frame Wiring	6-5
6-4.	Location of the Printed Wiring Board	6-7
6-5.	AU-170 Board – Soldering Side –	6-7
6-6.	AU-171 Board – Soldering Side –	6-11
6-7.	AU-172 Board – Soldering Side –	6-15
6-8.	SY-3 (M), EX-4, SW-7 (M), CN-14 (M), AC-3 Board – Soldering Side –	6-19
6-9.	MT-74, LED-5, VR-148 Board – Soldering Side –	6-26
7.	**EXPLODED VIEWS**	7-1
8.	**ELECTRICAL PARTS LIST**	8-1
	(CCP-2400)	
9.	**CCP-2400 DIAGRAMS**	
9-1.	Block Diagram (Audio)	9-1
9-2.	Block Diagram (System)	9-3
9-3.	Frame Wiring	9-5
9-4.	Location of the Printed Wiring Board	9-7
9-5.	AU-171 Board – Soldering Side –	9-7
9-6.	AU-172 Board – Soldering Side –	9-11
9-7.	SY-3 (S), EX-4, SW-7 (S), CN-14 (S), AC-3, LED-5 Board – Soldering Side –	9-15
10.	**EXPLODED VIEWS**	10-1
11.	**ELECTRICAL PARTS LIST**	11-1

SECTION 1
GENERAL

1-1. FEATURES

CCP-2300 Audio Cassette Duplicator

- High speed cassette duplication at 16 times normal speed.
- Side selector to select one-side duplication or both-side duplication.
- Auto-copy function to activate a series of tape operation automatically at the press of a button.
- Short tape indicator to show that duplication may be uncompleted due to a short copy tape and that a check is required.
- Control output terminal for connecting an additional audio cassette duplicator with copy section only.
- Playback volume controls with level meters for each channel of the original tape.
- Two-reel motor direct drive system per each positon.
- End beep when duplication is finished.
- The static suppression brush for preventing electrostatic noise.
- Up to 10 CCP-2400s can be connected to CCP-2300.

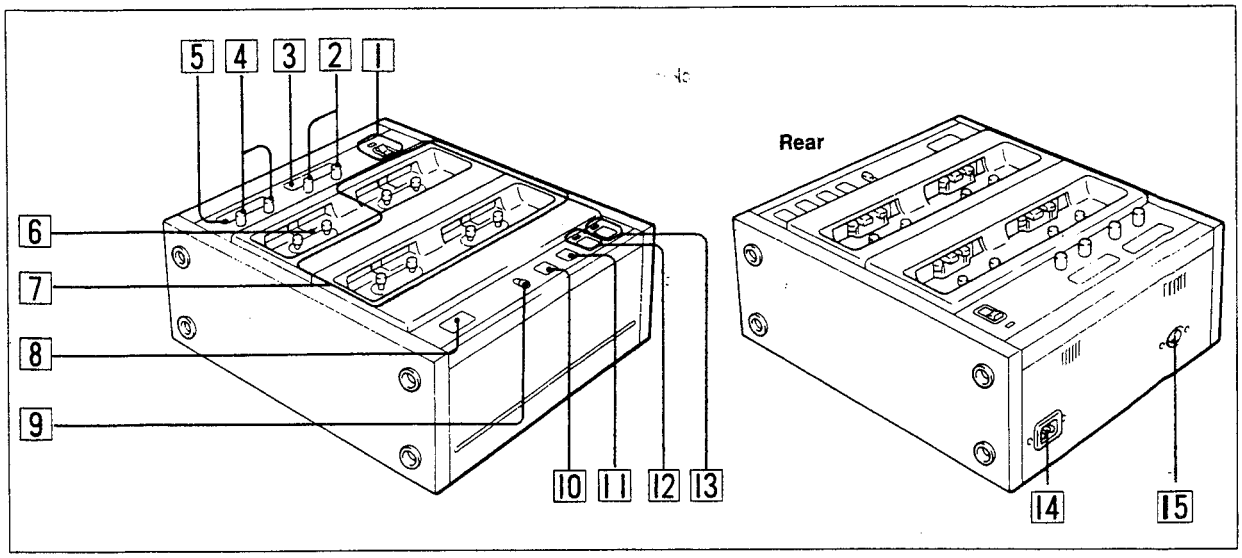
CCP-2400 Audio Cassette Duplicator

When connected to CCP-2300:

- High speed duplication onto 4 copy cassettes at 16 times normal speed.
- Tape operation fully controlled by the connected CCP-2300.

1-2. LOCATION AND FUNCTION OF CONTROLS

CCP-2300



1 Power switch and indicator
Turn the switch ON and the indicator lights up. The SHORT TAPE indicators also light up. After four seconds of warming up, the SHORT TAPE indicators will go off and the unit will be ready to operate.

2 Side B playback level controls
The knobs L and R control the left and right output levels of the playback sound respectively.

3 Side B level meters
The meters L and R indicate the left and right output levels of the playback sound respectively.

4 Side A playback level controls
The knobs L and R control the left and right output levels of the playback sound respectively.

5 Side A level meters
The meters L and R indicate the left and right output levels of the playback sound respectively.

6 ORIGINAL cassette compartment

7 COPY cassette compartments 1, 2 and 3

8 SHORT TAPE indicators
Lights when the corresponding copy tape reaches the end before the original tape is completely duplicated. (Refer to "SHORT TAPE Indicator" on page 1-9).
Also lights when there is no tape in the corresponding cassette compartment. The indicators go off when any button but STOP is pressed.

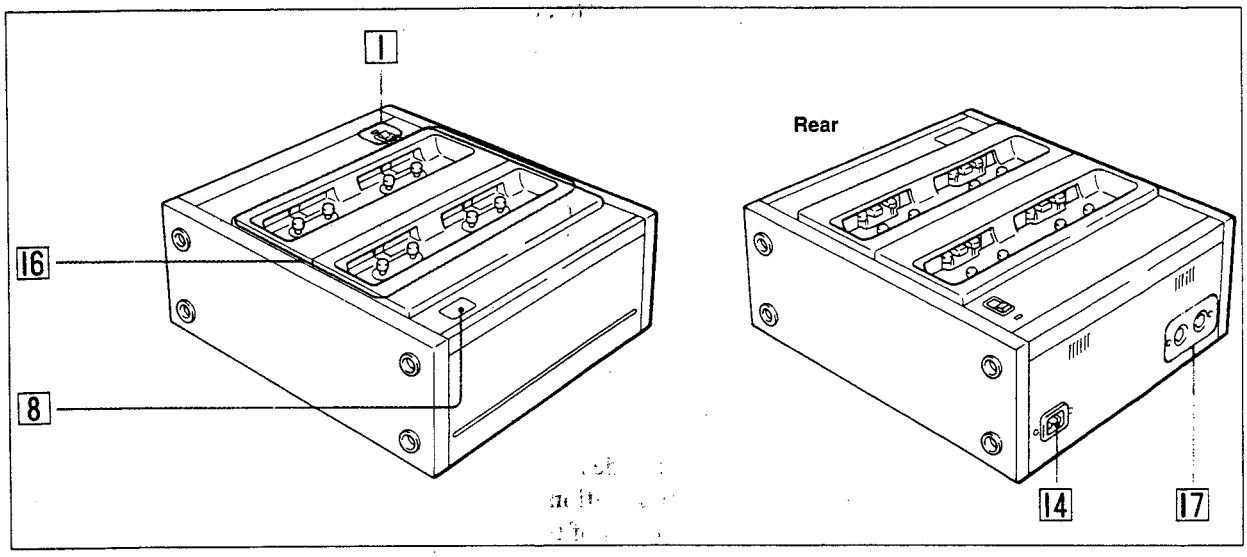
9 SIDE SELECT switch
Selects one side or both sides of the cassette per duplication run.
A : for one side duplication.
A + B : for both sides duplication.

10 REWIND button
Press to rewind the tape(s). Each tape stops automatically at the beginning. The tapes in all connected CCP-2400 duplicators will also be rewound.

11 STOP button
Press to stop the tape(s). The tapes in all connected CCP-2400 duplicators will also stop.

CCP-2400

1, 8 and 14 controls have the same function as the ones on the CCP-2300.



12 COPY button and indicator

Press to duplicate the tapes. The indicator lights and playback of the original tape and recording on the copy tape start immediately. Recording also starts in all connected CCP-2400 duplicators. When duplication is finished, all the tapes stop. The indicator goes off and the end beep sounds.

13 AUTO COPY button and indicator

Press to rewind and then duplicate the tapes. The indicator lights and all the tapes are rewound to the beginning. When all the tapes have been rewound, the AUTO COPY and COPY indicators light and then playback of the original tape and recording on the copy tapes start. Recording also starts in the connected CCP-2400 duplicators. When duplication is finished and all the tapes come to the end, the COPY indicator goes off. With the AUTO COPY indicator still lit, all the tapes, except the tape with its SHORT TAPE indicator lit, start to rewind. When all the tapes are rewound to the beginning, the AUTO COPY indicator will go off and the end beep will sound.

14 AC IN socket

Connect the supplied AC power cord.

15 LINE/CONTROL OUTPUT connector (13-pin DIN)

Supplies the track signal of the original tape and the driving signal to additional duplicators. Connect to the LINE/CONTROL INPUT connector of CCP-2400.

16 COPY cassette compartments 1, 2, 3 and 4

17 LINE/CONTROL connectors (13-pin DIN)

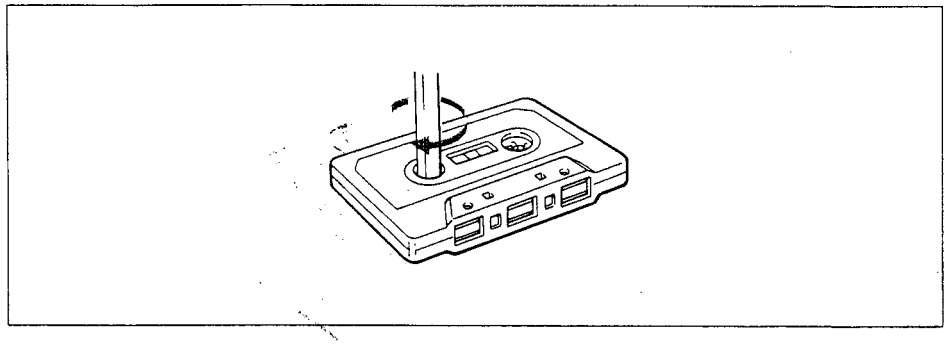
INPUT: Accepts the track signal of the original tape and the driving signal from CCP-2300. Connect to the LINE/CONTROL OUTPUT connector of CCP-2300.

OUTPUT: Supplies the track signal of the original tape and the driving signal to an additional duplicator. Connect to the LINE/CONTROL INPUT connector of the additional CCP-2400.

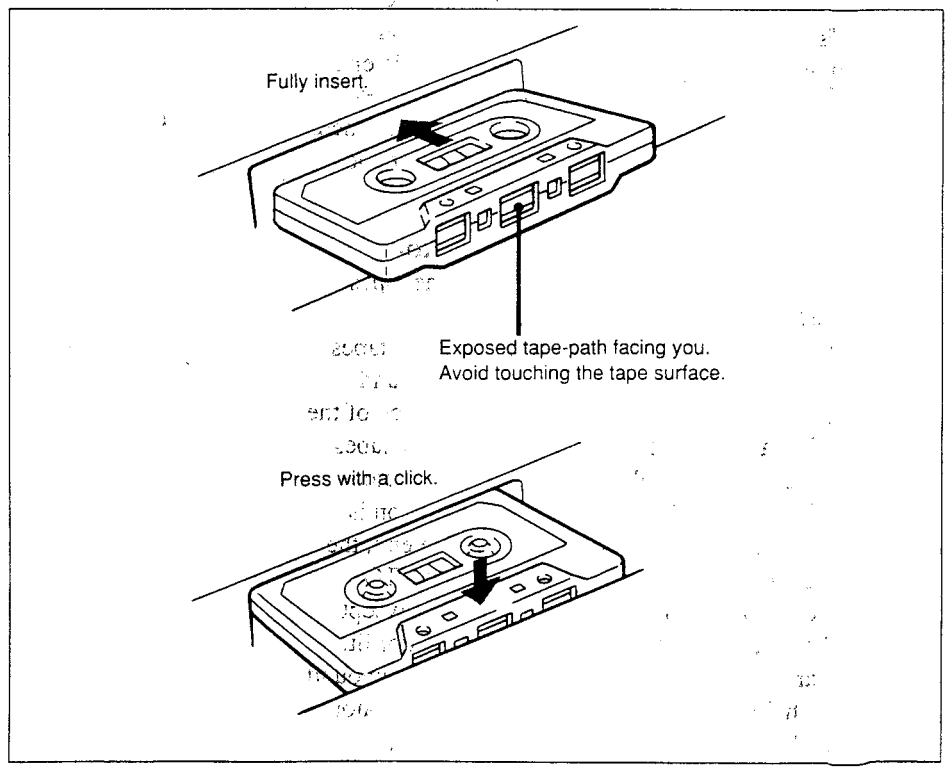
1-3. PREPARATION

Cassette Insertion

1 Before inserting a cassette, take up any slack in the tape.

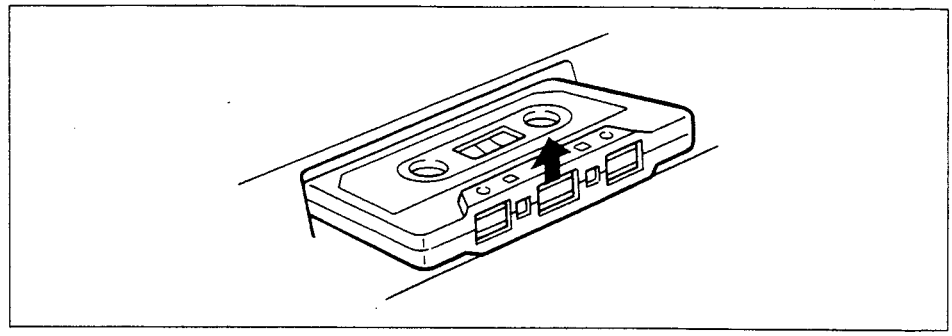


2 Check the cassette sides.
For both-side duplication: To duplicate the content of the original cassette side A onto the side A of the copy cassette, install the cassettes with the same side up.
For one-side duplication: Insert the original and copy cassettes with the required side up.



To remove

First lift off the tape-path side and then remove the cassette.

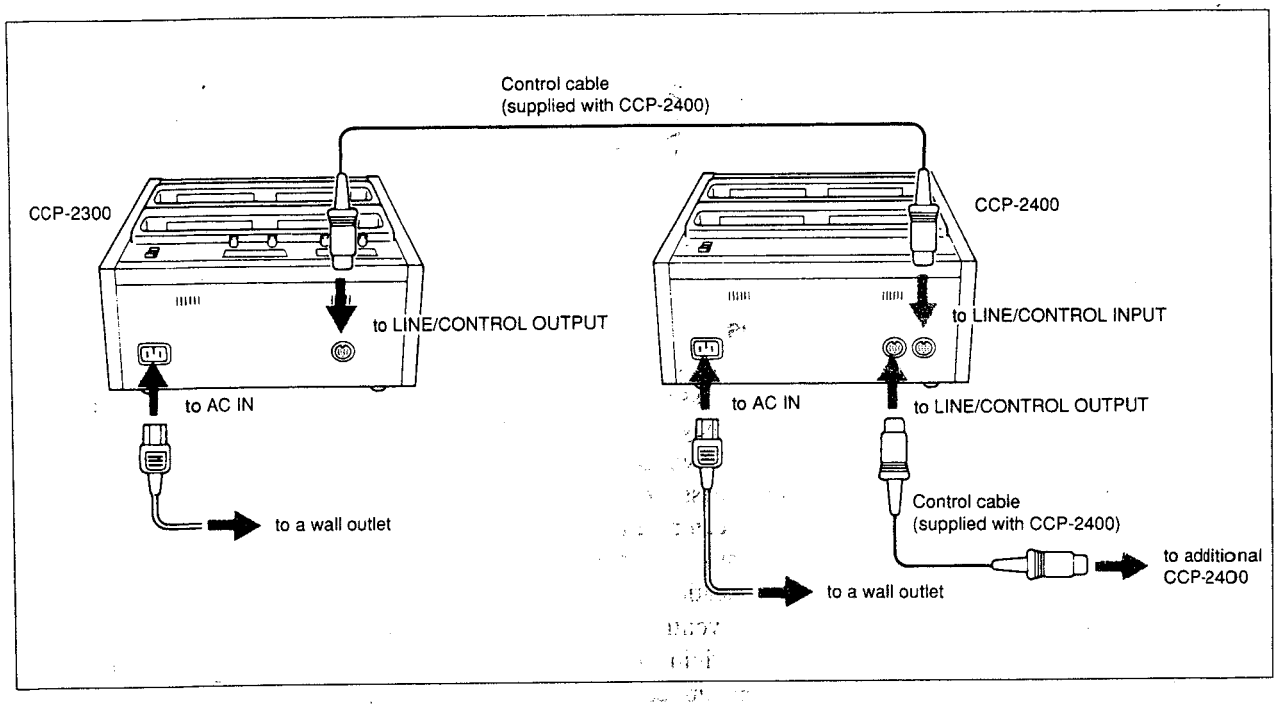


Notes on cassettes

- Use normal TYPE I cassettes.
- It is advisable to use cassettes of the same brand, as, even if the cassettes have the same rated duration, they may differ a little in length, depending on the manufacturers. This prevents incomplete duplication.
- Use of a 120-minute cassette tape is not recommended. Frequent switching of the tape operation mode can result in the tape becoming tangled because the tape is very thin and can easily be stretched.
- Remember that duplication can be made, even though the copy cassette has had the safety tabs for preventing accidental erasure removed.
- The recording of an original cassette will deteriorate by several decibels at 10 kHz after it has been duplicated 100 times. If it should be duplicated more than 100 times, prepare extra original cassettes.

Connection

Connect the LINE/CONTROL OUTPUT connector and the LINE/CONTROL INPUT connector.

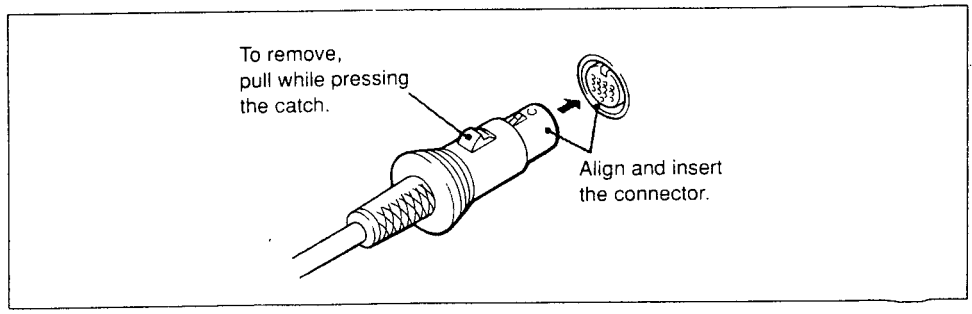


Notes

- Before making connections, be sure to turn off the power.
- You can connect up to 10 CCP-2400s in series.

Using control cable

Connect the LINE/CONTROL OUTPUT connector and the LINE/CONTROL INPUT connector as illustrated below.



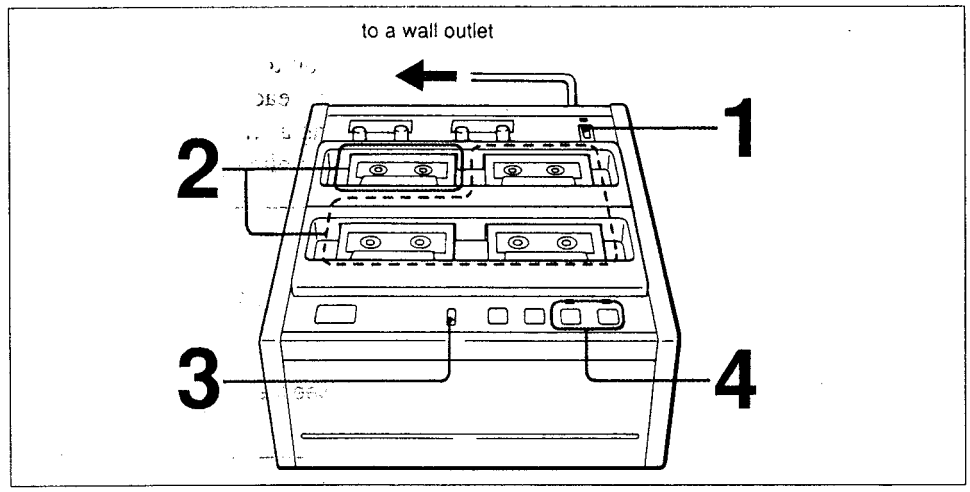
How to insert or remove the connector

1-4. DUPLICATION

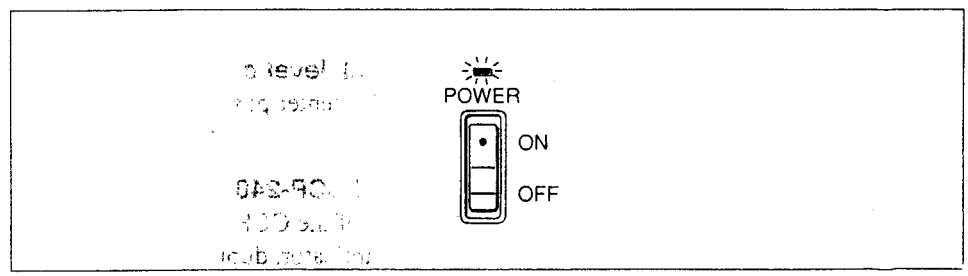
Before starting the unit

Five-minute warming up is recommended before starting the unit.
During warming up, you can clean the heads

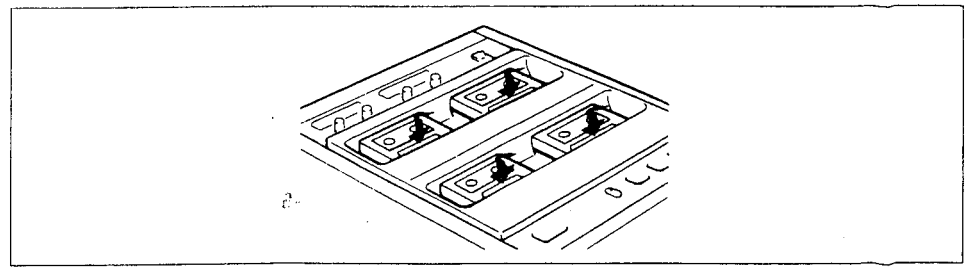
To duplicate the tapes



1 Set the Power switch to ON.
The indicator lights up.
Allow four seconds for warming up.

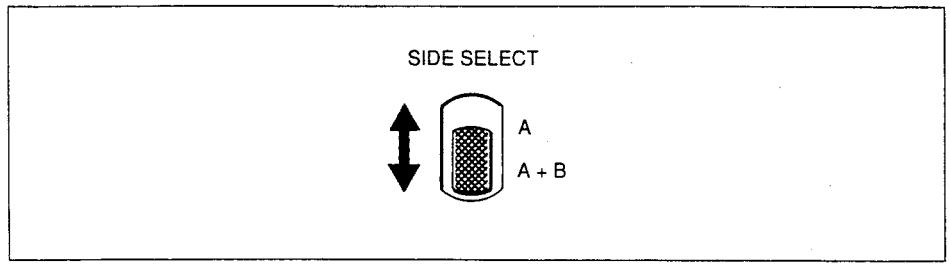


2 Insert the original cassette and the copy cassette(s).

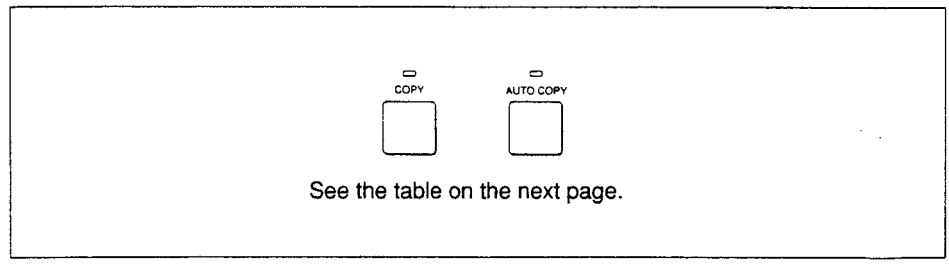


(To be continued)

3 Select the cassette side to be duplicated.
A: for one side of the cassette.
A + B: For both sides of the cassette.



4 Press the AUTO COPY button or COPY button.
AUTO COPY: To rewind each tape, start duplicating and rewind to the beginning again.
COPY: To start duplicating immediately without rewinding.



See the table on the next page.

To rewind the tape(s) independently
Insert only the cassette(s) to be rewound and then press the REWIND button. Each tape will be rewound to the beginning and will stop.

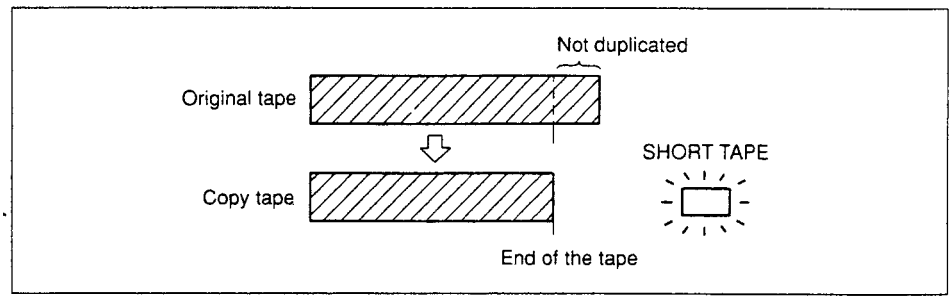
To stop the tapes
Press the STOP button.

To adjust the playback level controls
Normally set them to the center position, and adjust them by watching the level meters.

To use the additional CCP-2400 duplicator
Set the POWER switch of the CCP-2400 to ON and insert copy cassettes. By operating the master duplicator, duplication will begin on the additional duplicator simultaneously.

About SHORT TAPE Indicator

The SHORT TAPE indicator lights to show that a copy tape was so short that the duplication may not have been made completely and that a check is required. When a copy tape reaches the end before the end of the original tape, it stops but the original tape continues running. The corresponding SHORT TAPE indicator will light. The SHORT TAPE indicator will go off by pressing any button but STOP.

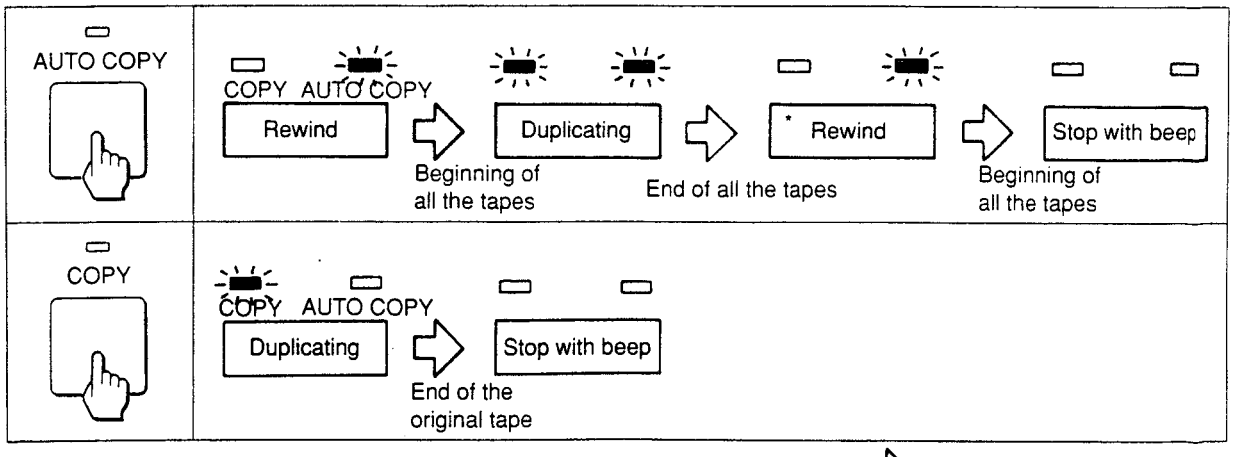


Note

When a copy tape reached the end just a moment after the end of the original tape, the SHORT TAPE indicator may light even if duplication is complete. To confirm duplication, use a cassette recorder to play back near the end of the copy tape. The indicator also lights when there is no tape in the cassette compartment.

Operation when the AUTO COPY or COPY button is pressed

The operation of the original and copy tapes is controlled as in the following table.

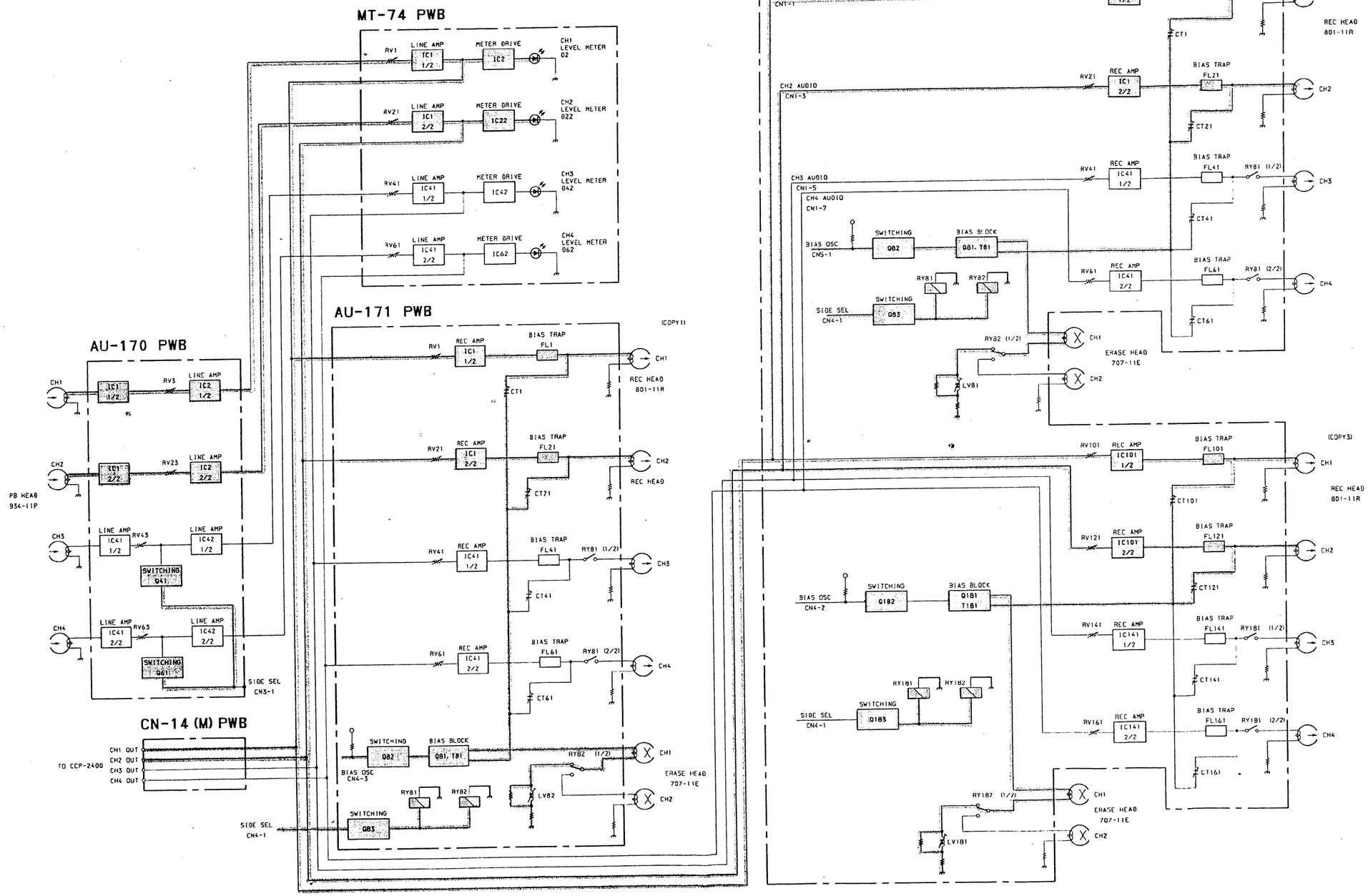


* If the SHORT TAPE indicator is lit, the corresponding tape is not rewound.

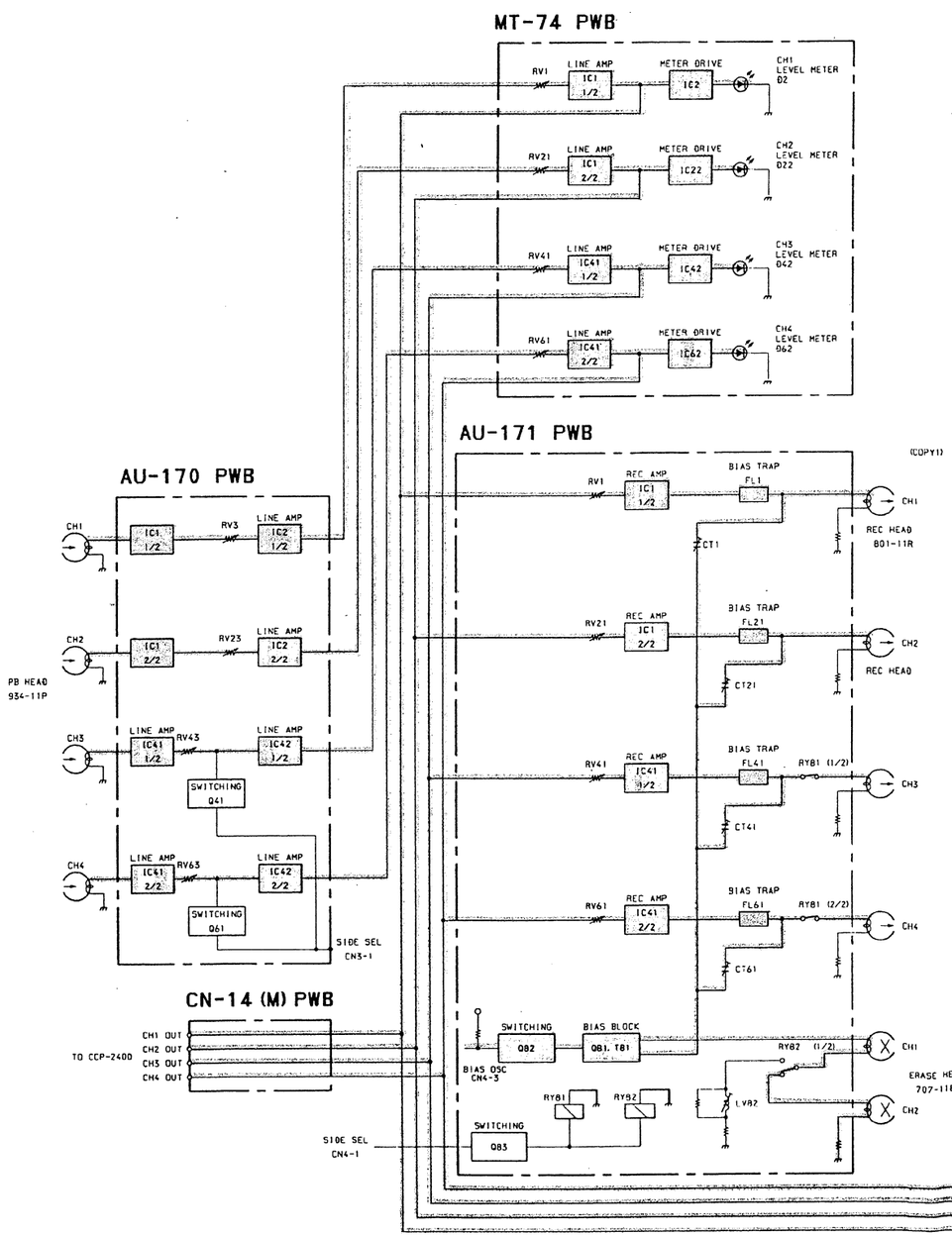
SECTION 2
CIRCUIT DESCRIPTION

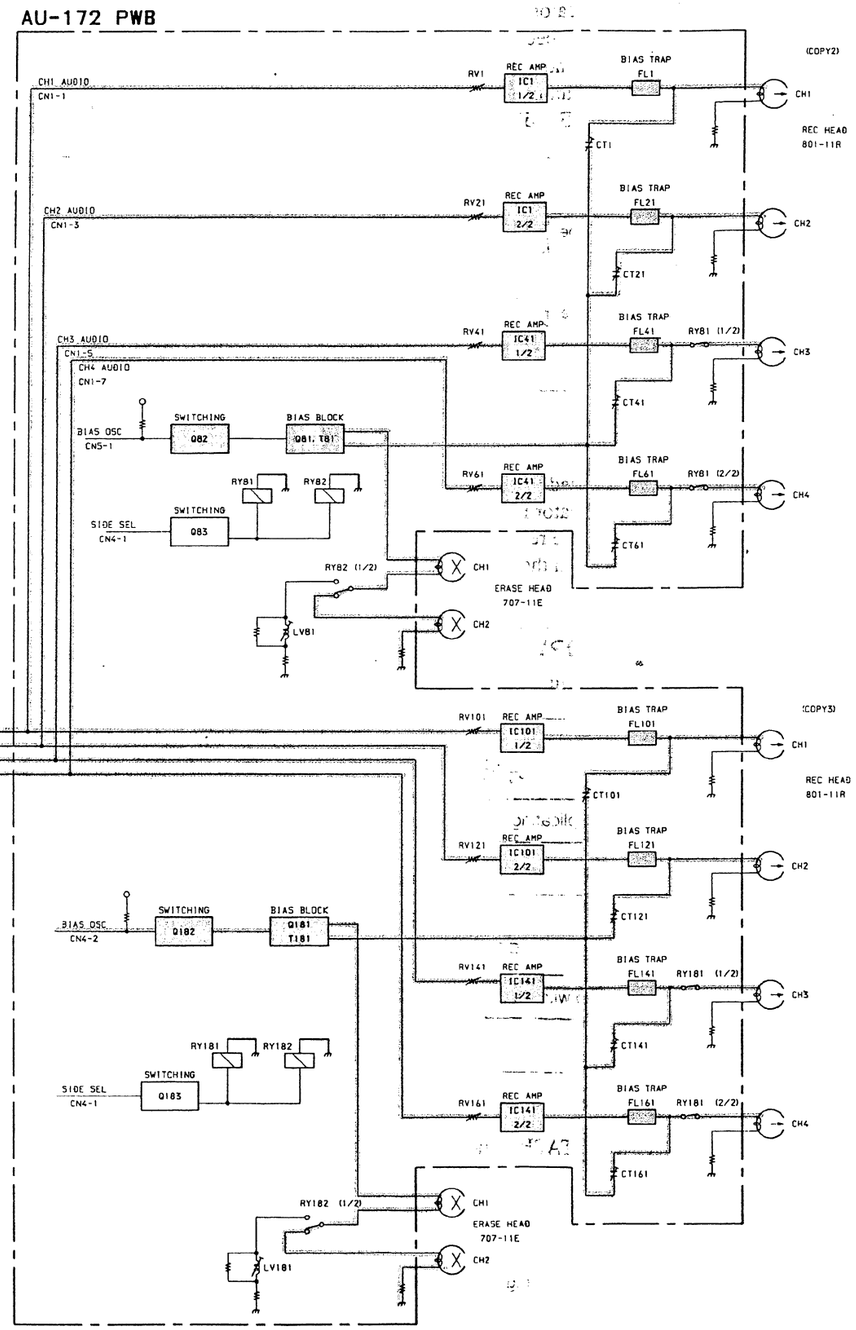
2-1. OPERATION STATE

CCP-2300 AUDIO (COPY A MODE)



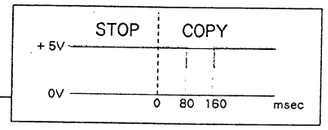
CCP-2300 AUDIO (COPY A+B MODE)

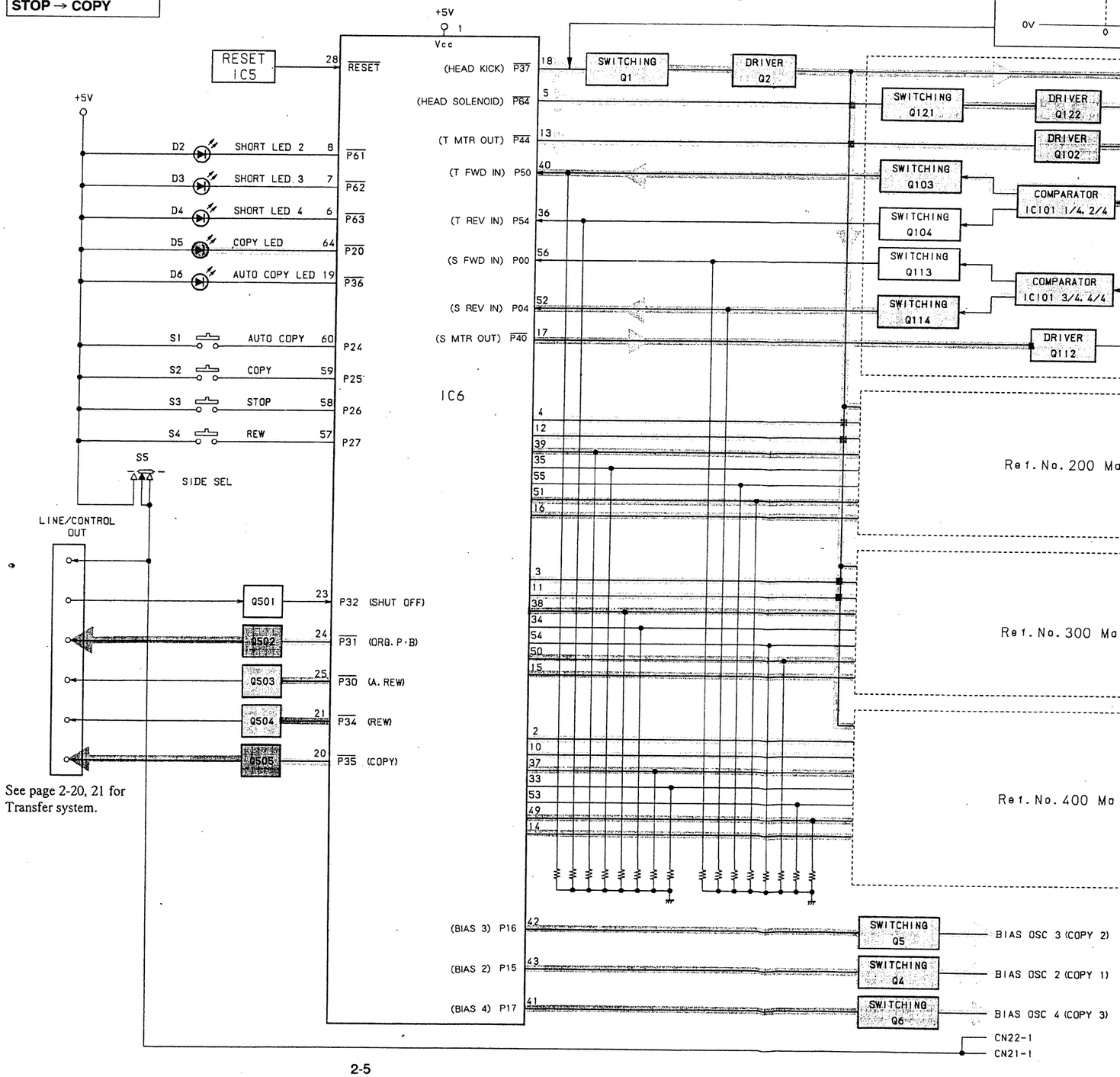




CCP-2300 CONTROL
STOP → COPY

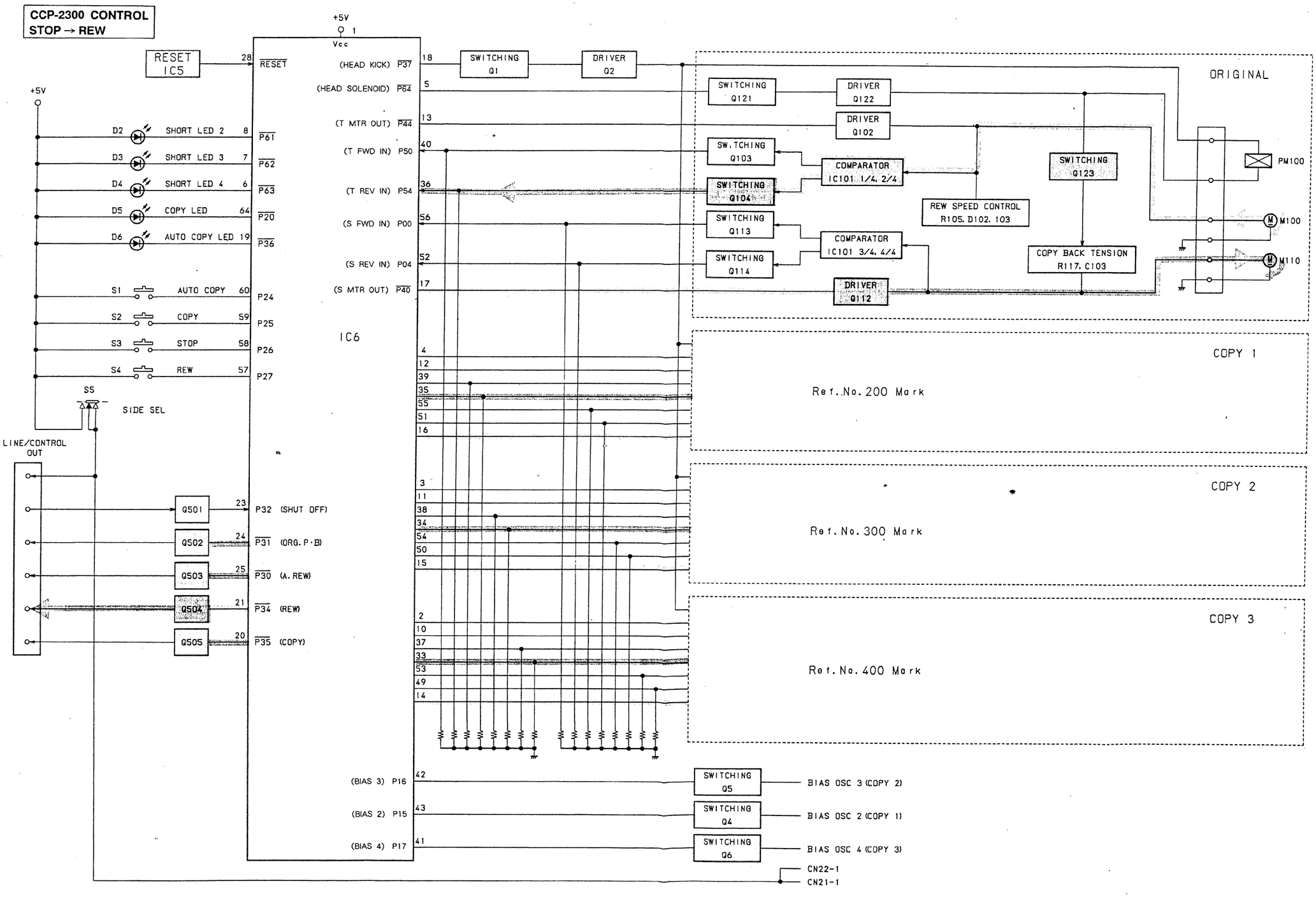
▨ ; Operating or high portion
▨ ; Operating or low portion





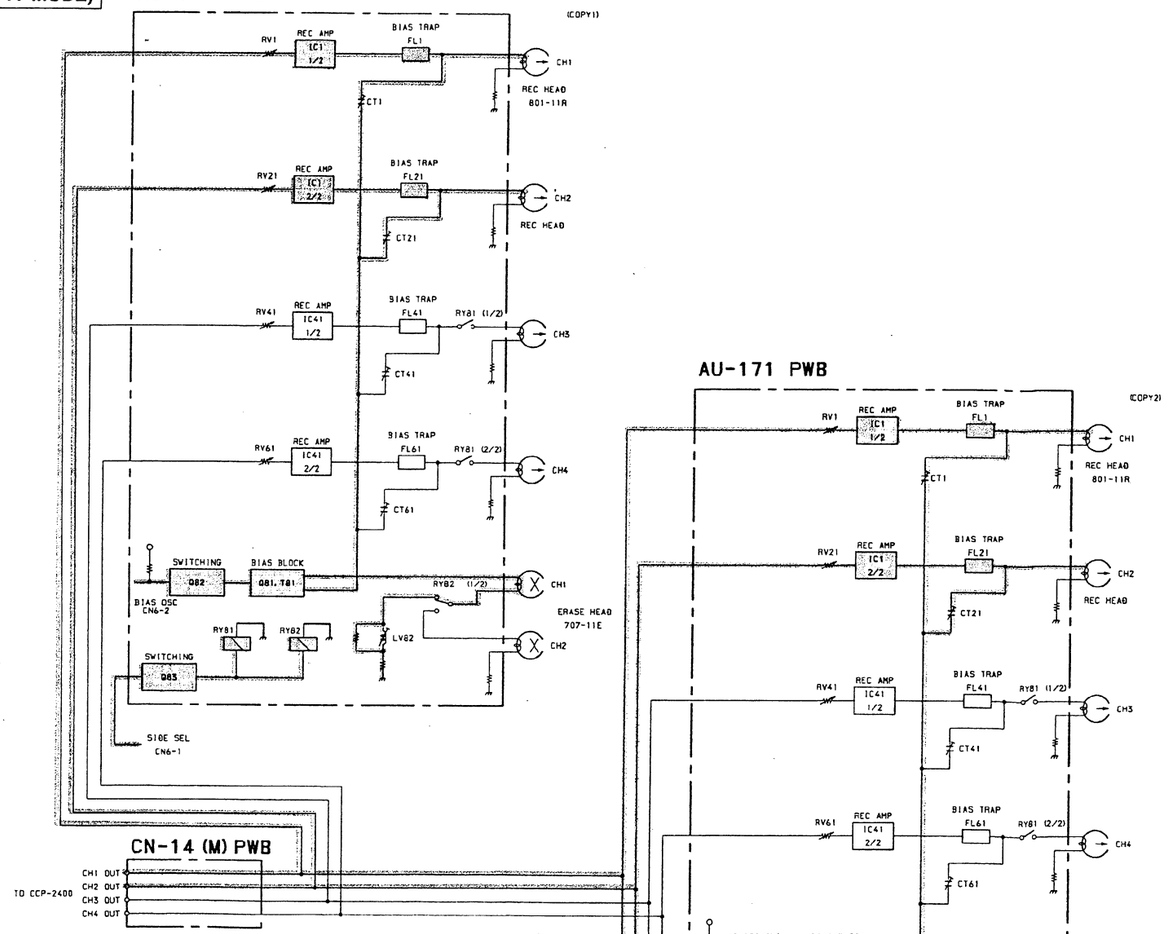
See page 2-20, 21 for Transfer system.

CCP-2300 CONTROL
STOP → REW

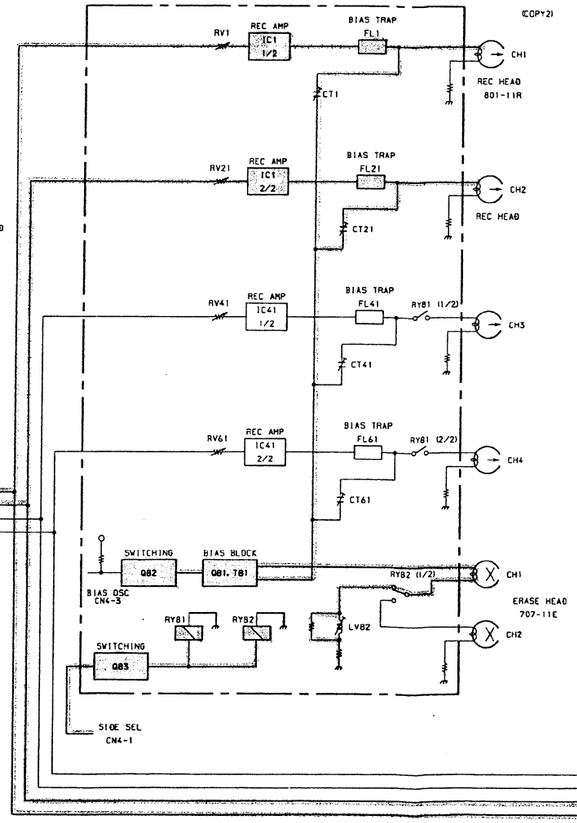


CCP-2400 AUDIO (COPY A MODE)

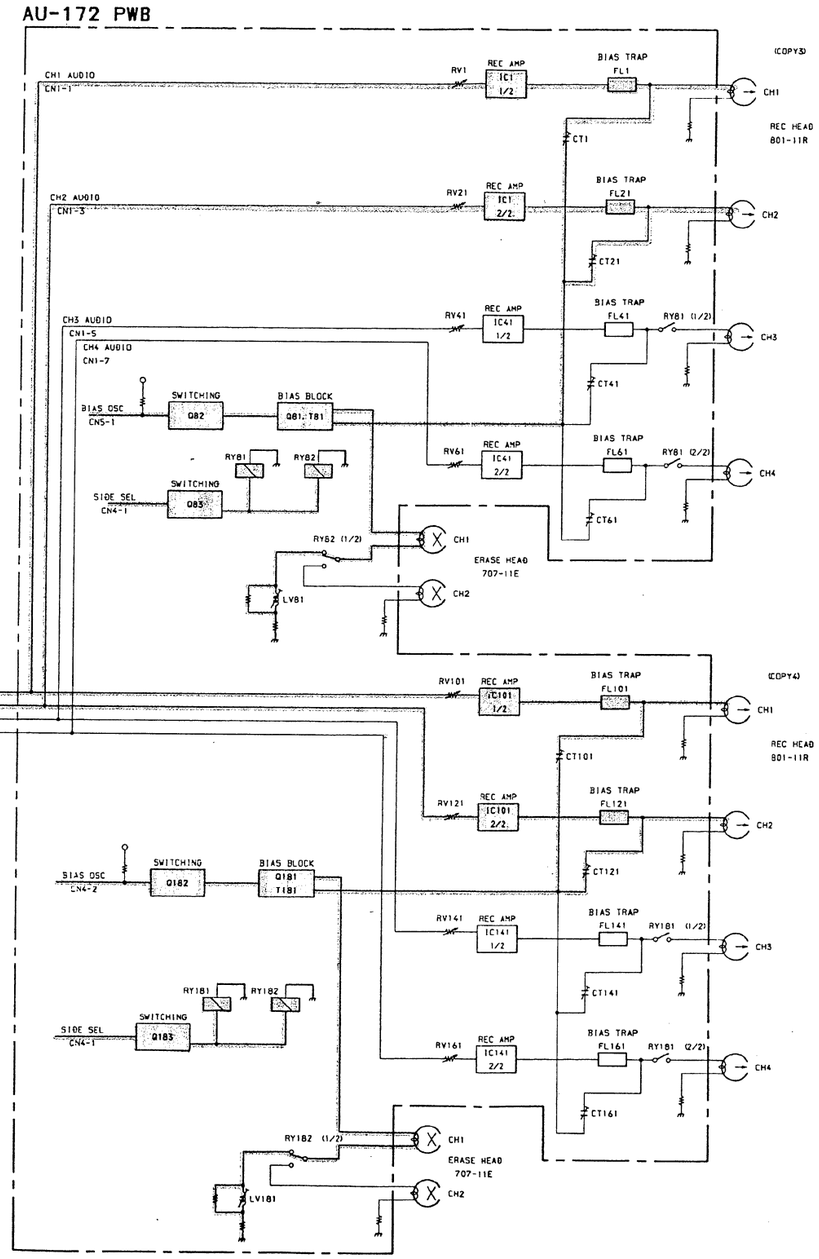
AU-171 PWB



AU-171 PWB



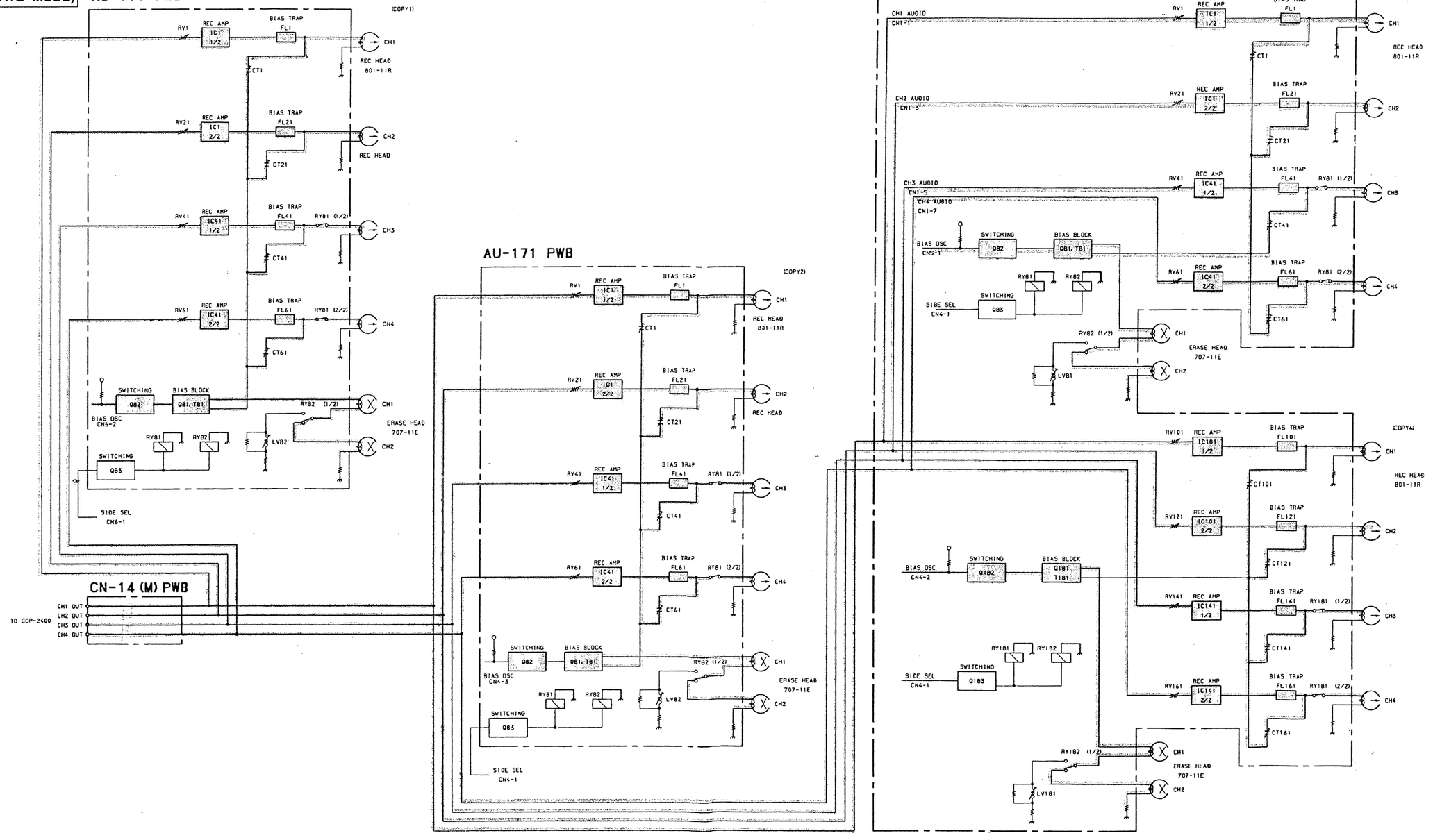
AU-172 PWB



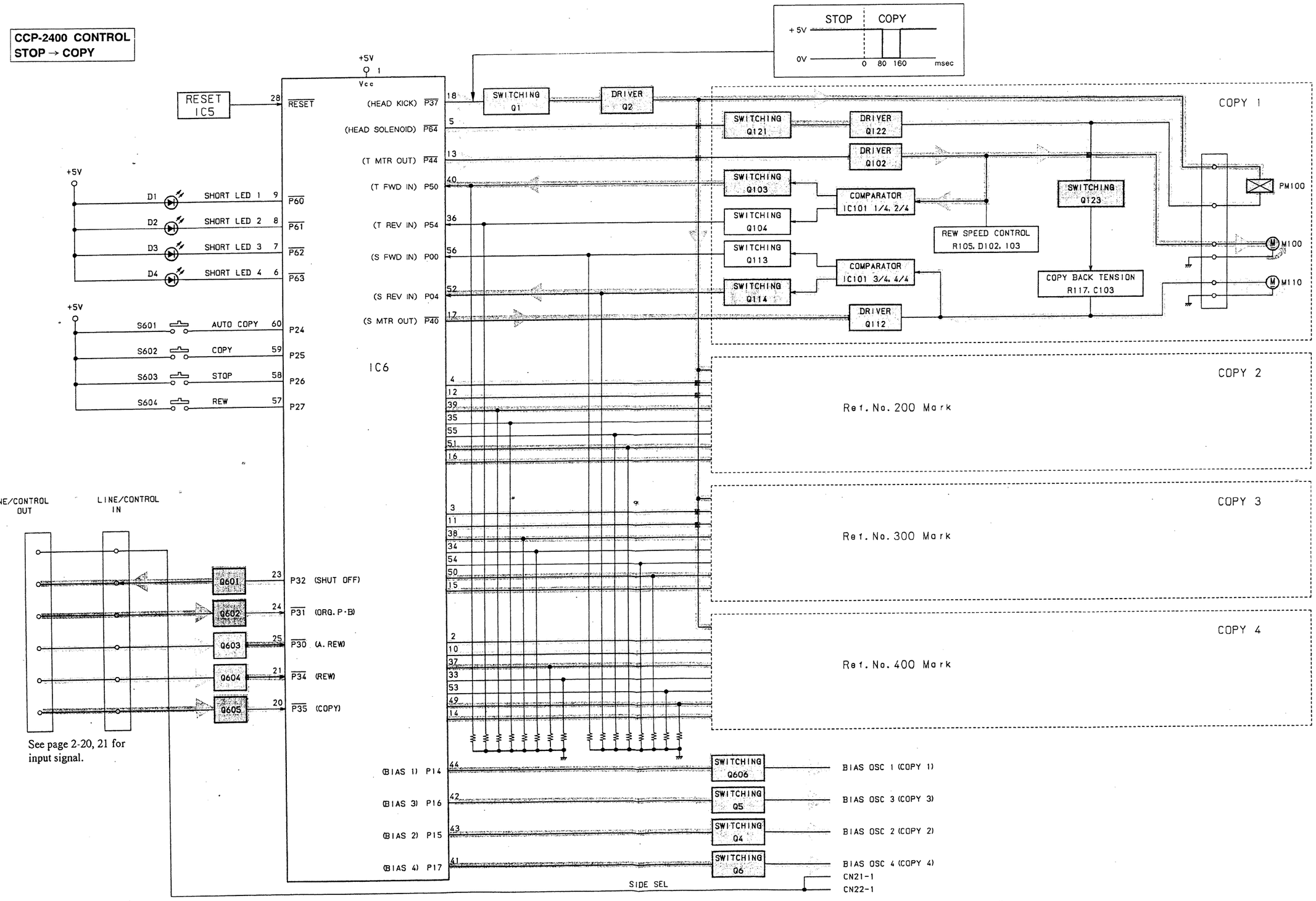
CCP-2400 (COPY A+I

TO C

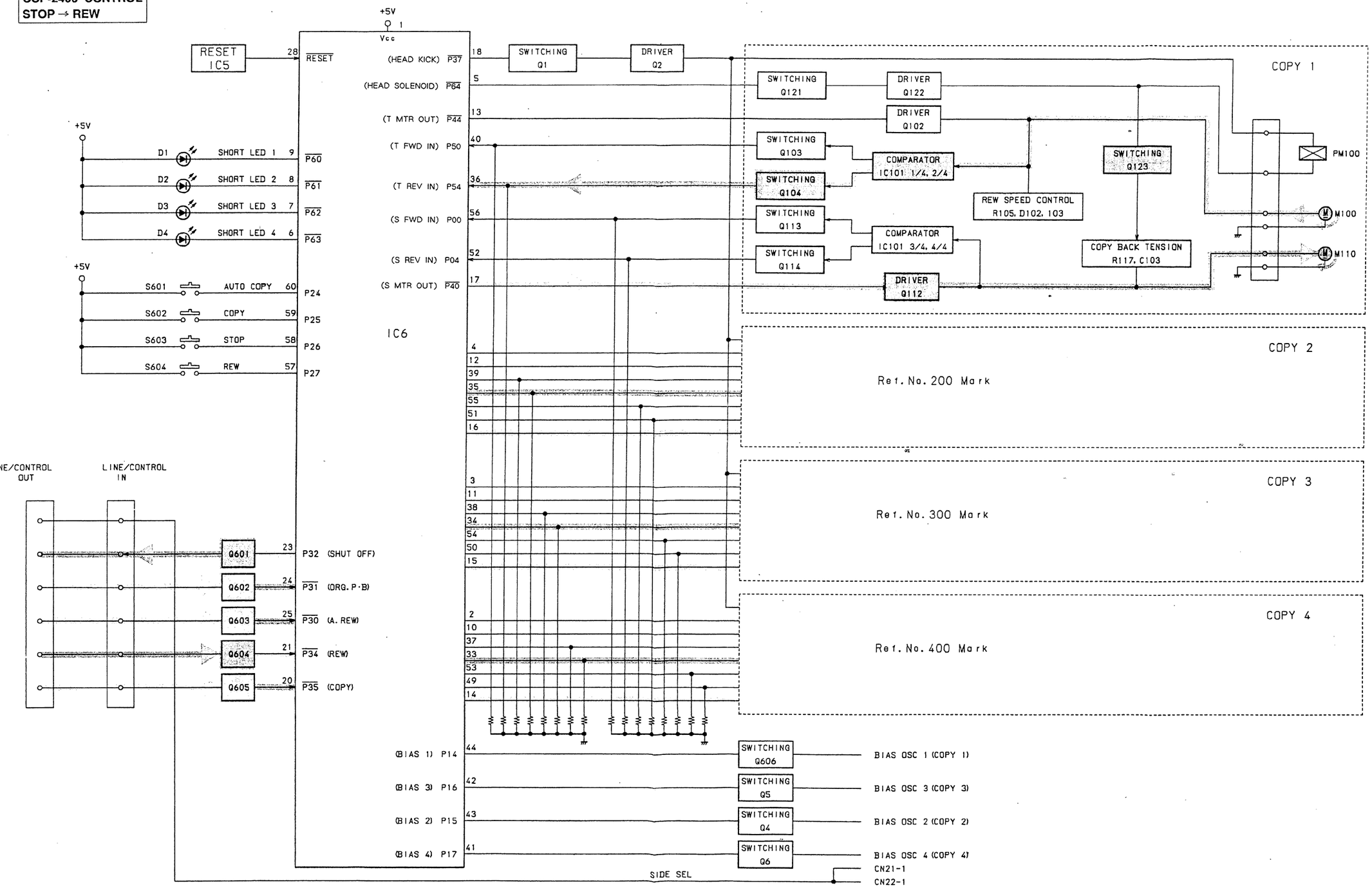
CCP-2400 AUDIO (COPY A+B MODE)



CCP-2400 CONTROL
STOP → COPY



CCP-2400 CONTROL
STOP → REW



2-2. CAPSTAN ASSEMBLY

The unit employs 4 sets of capstan assemblies to drive a capstan motor using 2 capstan belts.
Figure 1 shows a layout of capstan assemblies and capstan motor as viewed from rear side of chassis with the bottom plate removed.

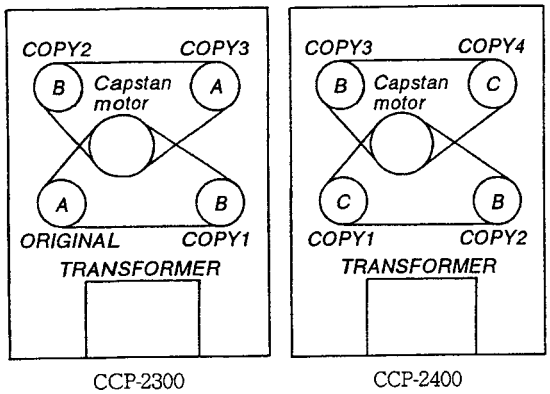


Figure 1

2-2-1. Speed Lag between Original MD and Copy MD

In the CCP-2300/2400, the speed in the copy MD is slower by 1% than that in the original MD in order to prevent an unrecorded portion that will otherwise be present due to the fact that the copy tape is rewounded faster than original tape.
This speed lag is done with difference in diameter of flywheels.

2-2-2. Kind and Arrangement of Capstan Assemblies

The kind and combination of capstan assemblies are as shown in Figure 1 and Table 1 ; a total of three kinds are available in the CCP-2300/2400.

MD CCP-2300 /CCP-2400	CCP-2300	CCP-2400
ORIGINAL /COPY1	A-2109-010-A Capstan (A) Assy	A-2109-011-A Capstan (C) Assy
COPY1 /COPY2	A-2109-009-A Capstan (B) Assy	A-2109-009-A Capstan (B) Assy
COPY2 /COPY3	A-2109-009-A Capstan (B) Assy	A-2109-009-A Capstan (B) Assy
COPY3 /COPY4	A-2109-010-A Capstan (A) Assy	A-2109-011-A Capstan (C) Assy

Table 1

2-2-3. Identification and Dimension of Capstan Assemblies

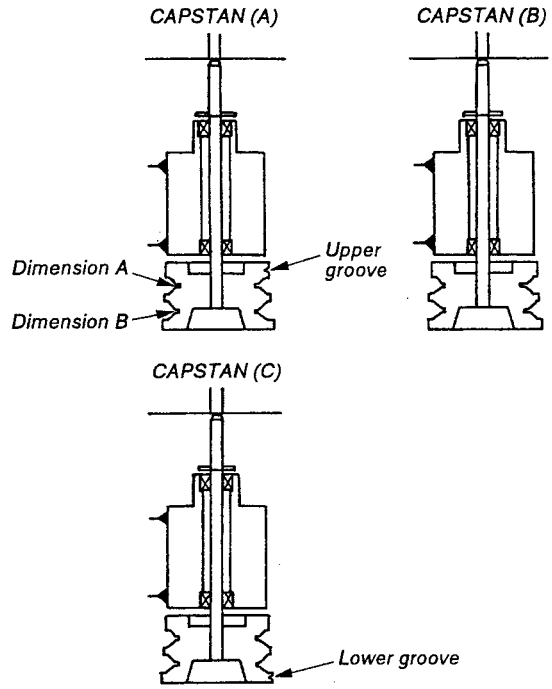


Figure 2

Identification of capstan assemblies :
1. Capstan (A) assembly···Upper groove in flywheel
2. Capstan (B) assembly···No groove
3. Capstan (C) assembly···Lower groove in flywheel

Flywheel inner diameter :

	Capstan (A) Assy	Capstan (B) Assy	Capstan (C) Assy
Dimension A	19.87	20.0	20.07
Dimension B	20.07	20.0	20.07

Note : Replace the capstan assembly with the same kind of capstan assembly when replacement is necessary.
Also, engage the belt at the same position, otherwise the speed will change.

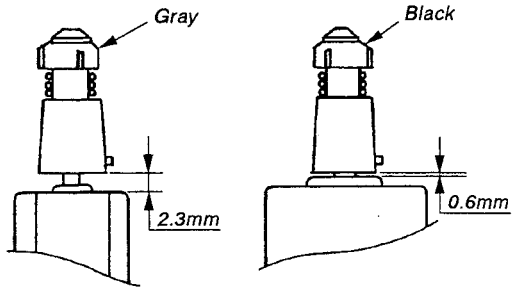
2-2-4. When Eliminating Speed Lag between Original and Copy

To make a tape without speed lag, the CCP-2300 must be modified since there is a 1% speed lag between original MD and copy MD in the CCP-2300/2400. Modification is made by replacing the capstan (A) Assy used for original MD in the CCP-2300 with capstan (C) Assy.

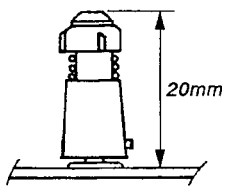
2-3. REEL HEAD ASSEMBLY POSITION

There are two methods available for replacing the reel head.

1) When reel head assembly is mounted on the stand alone motor (in case of motor change, etc.)
   Relative position between reel head and stand alone motor is A and B in Figure 3.



A : Reel head (L) Assy B : Reel head (R) Assy



C : Height from chassis

Figure 3

2) Positioning from chassis (if motor is attached to chassis)
   The distance from chassis to real head top is 20mm as shown Figure 3C.

Notes : 1. After replacement, confirm that the motor does not contact the reel head assembly.
2. Tighten the reel head assembly fixing screws (hex. socket head setscrew 2 × 3) with a hex. key wrench.
3. The left motor shaft is locally planed, and one of two setscrews should be positioned here.

2-4. ASSEMBLY OF CAPSTAN MOTOR AND MOTOR PULLEY

Insert slowly the motor pulley into the capstan motor shaft, and tighten hexagonal socket head screw where the pully is stopped.
Relative position between capstan motor and pulley is as shown in Figure 4.

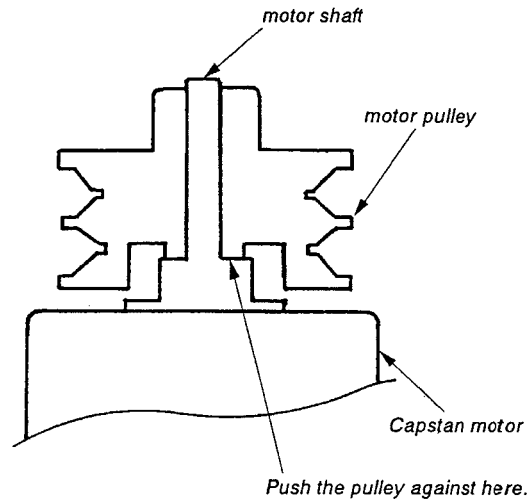
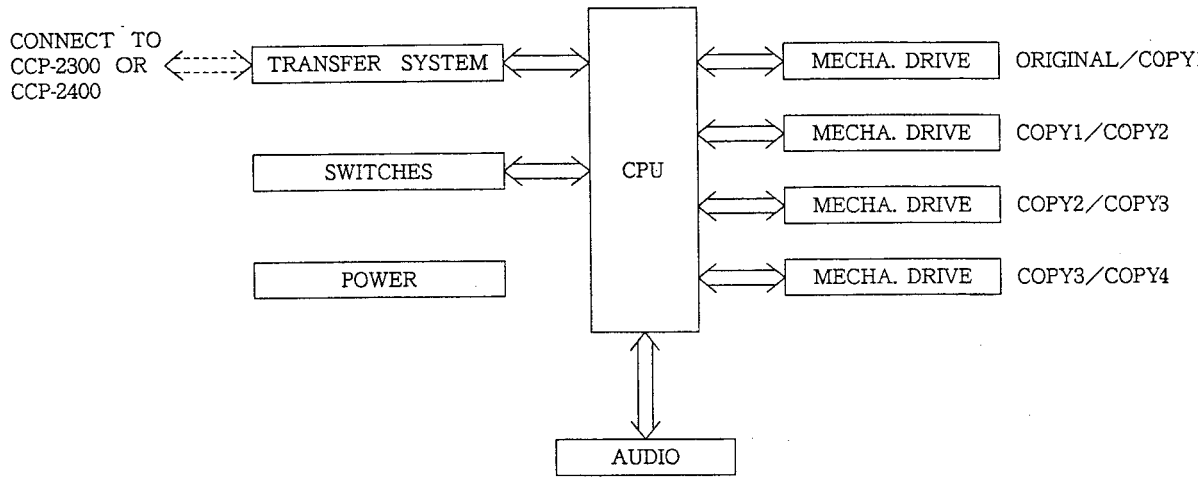


Figure 4

2-5. ELECTRICAL CIRCUIT

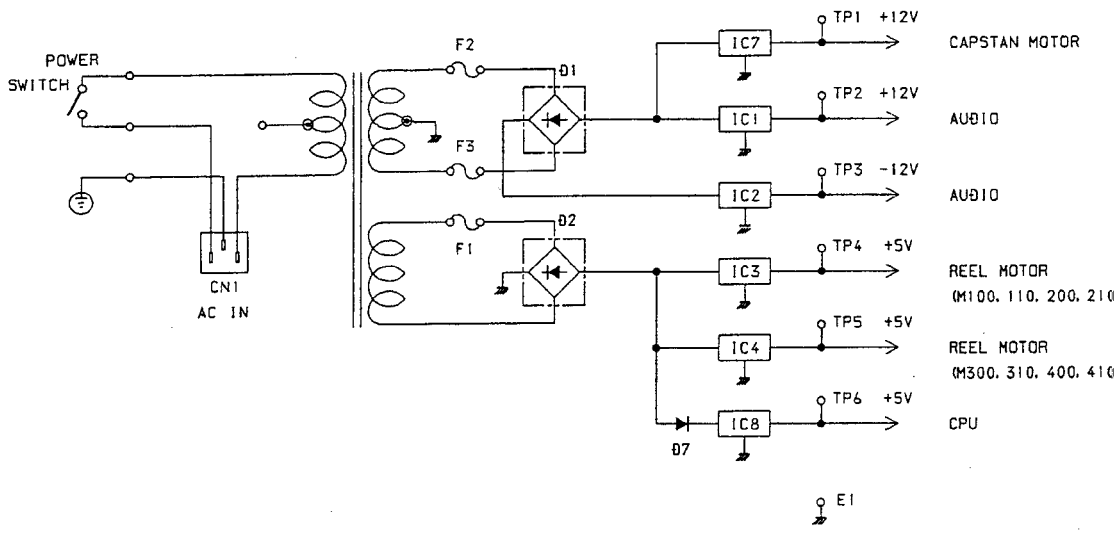
2-5-1. System block:

The circuits of the CCP-2300/2400 consist of each block as shown below.



2-5-2. Power supply:

Six 3-pin regulators are used, as shown below.



2-5-3. Mecha. drive:

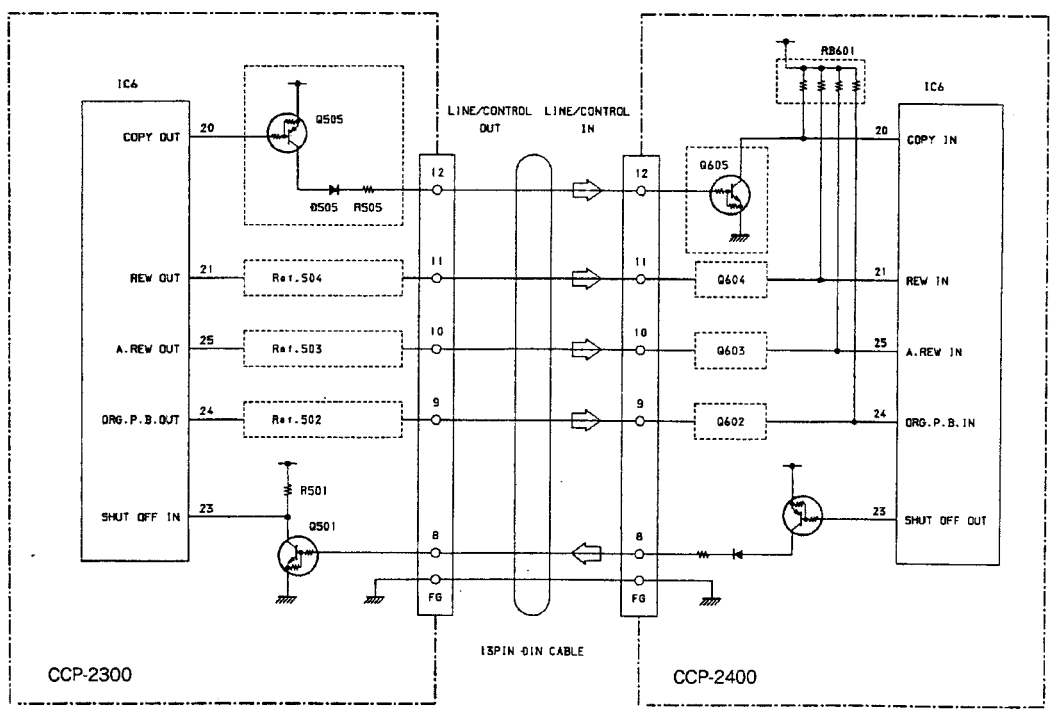
Each reel motor is linked to the CPU with two input signals (FWD IN, REW IN) and one output signal (MTR OUT).
With the input signals, the CPU judges the motor status (run or stop)

With the output signal, the CPU controls the motor rotation.
The control ports for reel motor are as listed below.
IC6 (CPU)

CPU PORT		IC6 (CPU) Pin No.				Operation		
		MD1	MD2	MD3	MD4	STOP	COPY	REW
OUT PUT	T MTR OUT	13	12	11	10	H	L	H
	S MTR OUT	17	16	15	14	H	H	L
INPUT	T FWD IN	40	39	38	37	L	H	L
	T REV IN	36	35	34	33	L	L	H
	S FWD IN	56	55	54	53	L	L	H
	S REV IN	52	51	50	49	L	H	L

2-5-4. Transfer system:

The digital signal system in the CCP-2300/2400 consists of three operation signal lines and two status signal lines. If plural units of CCP-2400 are connected, they are connected in parallel as viewed from the CCP-2300 side.



Operation signals.

13PIN CONNECTOR	STOP	COPY	REW	*A.REW
12	L	H	L	L
11	L	L	H	L
10	L	L	L	H

L : If CCP-2400 is not connected,"L" is "OPEN".

* A. REW : Only the tape for which the SHORT TAPE indicator does not illuminate is rewound.
In the AUTO COPY mode, REW→ COPY→A. REW are output.

Status signal (from CCP-2300 to CCP-2400)

13PIN CONNECTOR	Playback of original tape	others
9	H	L

Status signal (from CCP-2400 to CCP-2300)

13PIN CONNECTOR	Even one MD in CCP-2400 is running	All MDs in CCP-2400 stop
8	H	L

2-5-5. Switches:

Four switches are provided each for CCP-2300 and 2400. (For the CCP-2400, S601 – S604 on the right side of SY-3 board in the set.) The SIDE SELECT switch signal is not input to the CPU but it operates directly the relays on the audio board.

The set provides two special modes for service (cleaning mode and service mode), and these modes can be activated by the switch operation.

SECTION 3
SERVICE INFORMATION

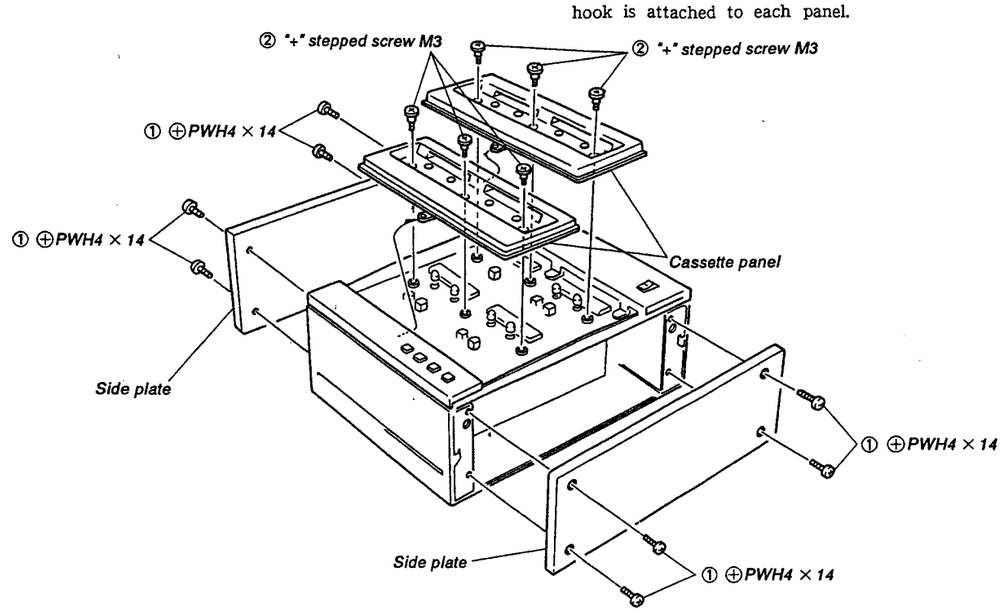
3-1. DISASSEMBLY

[Side plate]

① Remove screws (4 pcs each).

[Cassette panel]

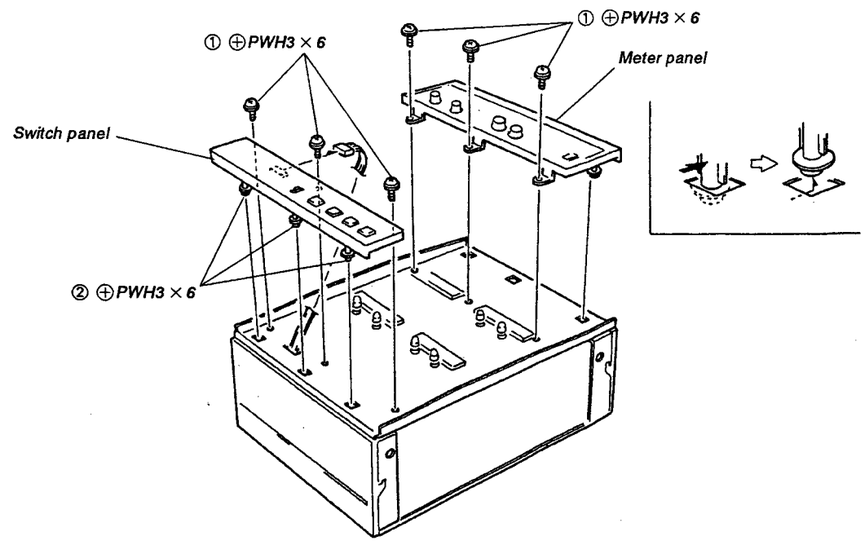
② Remove screws (3 pcs each). Note that a protruded hook is attached to each panel.



[Meter Panel] [Switch panel]

① Remove screws (3 pcs each).

② Disengage hooks (3 places each) of chassis.

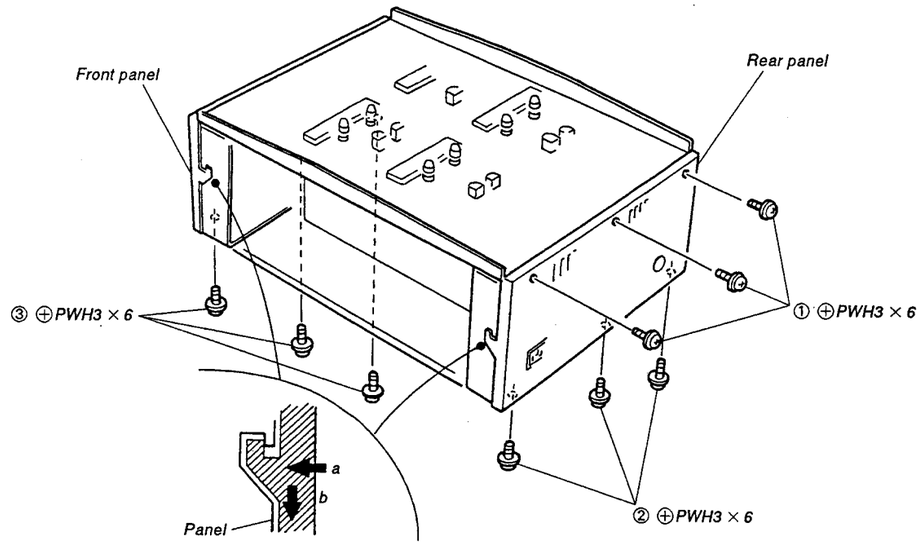


[Rear panel]

①, ② Remove screws (total 6 pcs).
Pushing the panel in direction "a", disengage the hook toward the direction "b".

[Front panel]

③ Remove screws (total 3 pcs).
Pushing the panel in direction "a", disengage the hook toward the direction "b".

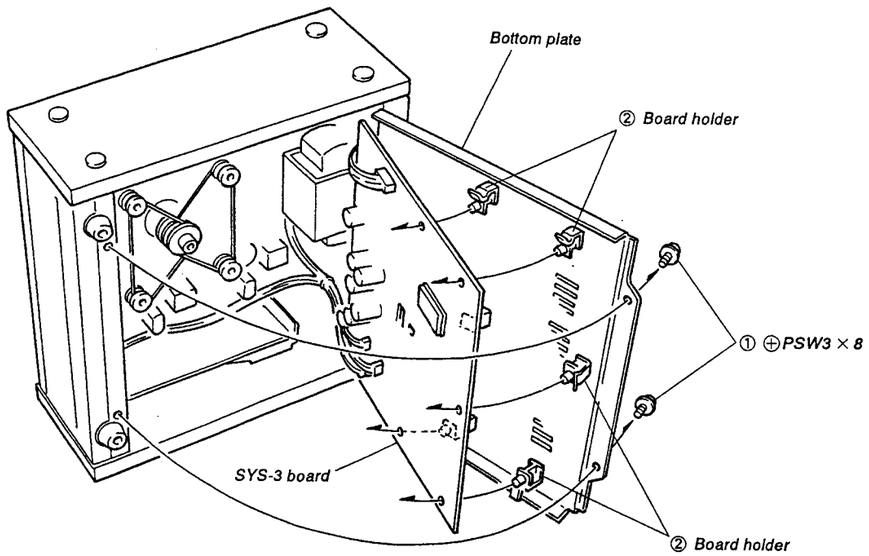


[Bottom plate]

① Remove screws (2 pcs), and the bottom plate will open together with the SY-3 board.

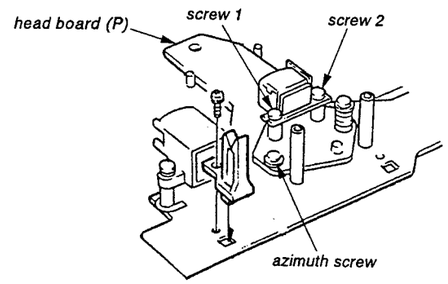
[SY-3 board]

② Remove the board holders (6 places), and the SY-3 board will open.



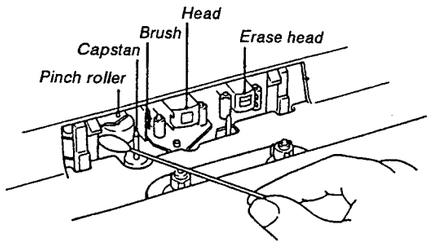
3-2. HEAD REPLACEMENT

1. Disconnect the lead wires of head at the solder part.
2. Remove the head fixing screws. (For screw 1, only loosen it.)
3. Install a new head with screws 1 and 2.
4. After installation, adjust height and azimuth of the head.



The set provides a cleaning mode and a service mode to facilitate the maintenance. Operate it in the procedure below.

3-3. CLEANING MODE



The head block will come out so that the head and pinch roller can easily be cleaned.
Operating method
CCP-2300

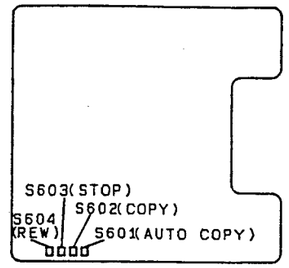
Take out the cassette. Turn on the POWER switch while pressing the COPY button, and the head block will come out in about 4 seconds. The head block returns automatically after 5 munits, however, the cleaning mode cannot be reset unless other than COPY button is pressed.

CCP-2400

Connect the CCP-2400 to the CCP-2300, turn on the POWER switch with the CCP-2300 in the cleaning mode, and the cleaning mode is then activated.
If the CCP-2400 alone is operated, turn on the POWER switch while pressing the COPY button (S602) inside the set, and the cleaning mode will be activated in about 4 seconds.(At this time, NEVER connect the CONTROL CABLE.)
After that, if the cleaning mode is reset by pressing other than COPY button, the CCP-2400 can be operated in the same manner as CCP-2300 by using the S601 – 604 switches.

However, the CCP-2400 cannot output signals to the transfer system.
For normal operation (linking with CCP-2300), turn off the POWER switch once.

SY-3 BOARD COMPONENT SIDE



3-4. SERVICE MODE

This mode facilitates adjustment of reel motor speed and head azimuth.
Operating method
The CCP-2300 and CCP-2400 can be operated in the same method.

1) Turn on the POWER switch while pressing the REW and AUTO COPY buttons.
2) Keep pressing both buttons, and when the SHORT TAPE indicator goes off after about 4 seconds, release the AUTO COPY button. (At this time, do not release the REW button.)
3) Further after 2 seconds, make sure that the SHORT TAPE indicator comes on again and the service mode is activated, then release the REW button.

The following operation is available.

AUTO COPY : Same status as the COPY, with exception that the bias does not rise up. Accodingly, the azimuth can easily be checked when the record head is connected directly to the playback amplifier.
COPY : The COPY status is maintained, so that the take up reel and plunger circuits can be checked.
REW : The REWIND status is maintained, so that the supply reel circuit can be checked.

Note : In the COPY and REWIND modes, the shutoff and brake circuits do not function. Therefore, never insert a cassette. If a cassette is inserted, the real motor can be damaged at the end of tape.

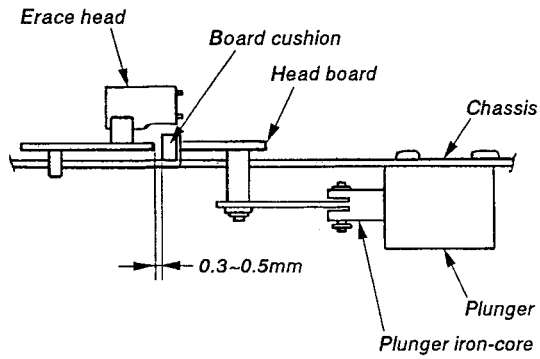
[Test tape]

Type	Part No.	Signal	
		Frequency (Hz)	Level (dB)
P-4-L300	7-819-011-11	315	0
P-4-A063	7-819-014-11	6.3 k	– 10
P-4-A100	7-819-016-11	10 k	– 10
WS-48A	7-819-032-11	3 k	0
CQ-012C	8-909-708-02	Mirror, 12 μ base	
CQ-201B	8-909-708-41	Torque	

SECTION 4
ADJUSTMENT

4-1. ADJUSTMENT OF PLUNGER STROKE

The plunger stroke must be adjusted to determine the head advance amount, when the plunger is replaced.



Replacement and Adjustment :

1. Removing the cassette retainer (3-164-259-01) on the front side of chassis will expose the plunger fixing screws (PSW 3 × 6).
2. Replace the plunger, fix it temporarily to the chassis, and link it to the head board.
3. Push in the plunger iron-core until it contacts closely the plunger main body, so that the head board advances.
4. Fix the plunger at the position where a clearance between head board and board cushion (3-146-245-01) bonded to the notch in the chassis is 0.3 to 0.5 mm.

Note : After replacement, confirm in the copy satatus (service mode or cleaning mode) that the clearance of 0.3~0.5mm is ensured.

4-2. REPLACEMENT OF ELECTROSTATIC BRUSH

An electrostatic brush is attached to the head board to eliminate static discharge. It comes in contact with the tape when the head board advances. Therefore, it wears.

Follow the procedure provided below when replacing the brush.

1) Remove the electrostatic brush assembly (PS 2 × 3) on the head board, then peel the brush off the brush bracket (3-164-234-01).
2) Clean the brush bracket with alcohol, and bond a new brush.
3) The electrostatic brush position is as shown in Figure 1.

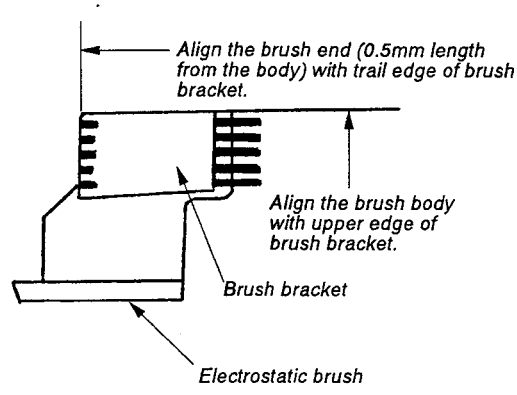
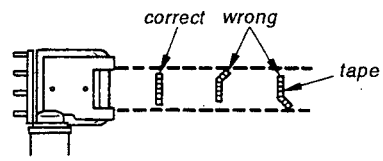

Align the brush end (0.5mm length from the body) with trail edge of brush bracket.
Align the brush body with upper edge of brush bracket.
Brush bracket
Electrostatic brush

Figure 1

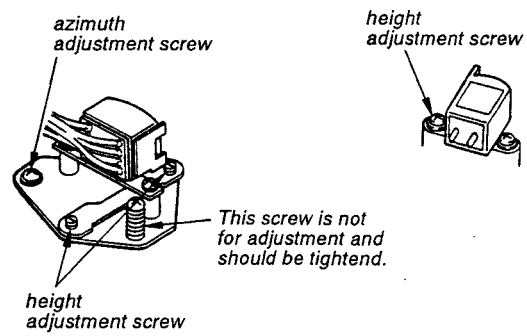
Note : The brushes are made of thin stainless wires. Take care not to bend them during replacement.

4-3. HEAD HIGHIT ADJUSTMENT

1. Install a mirror tape cassette (CQ-012C) and depress COPY button and STOP button alternately and watch the tape at tape guide.
2. In COPY mode, if tape is curled along tape guide, adjust the respective adjustment parts shown below.



Record and Playback Head : Guide Head :


azimuth adjustment screw
height adjustment screw
This screw is not for adjustment and should be tightend.
height adjustment screw

Note : Also pay attention to head verticality and flapping, and execute visual confirmation. For this, turn the front and back height adjustment screws and the vertical adjustment screw each for about the same amount.

4-4. HEAD AZIMUTH ADJUSTMENT

Select either of the following three methods.

A. When the playback amplifier (AU-170) in CCP-2300 is used.
B. There is no CCP-2300.
C. When the level meter on the CCP-2300 is used.

Note : Don't press the COPY, REWIND button in service mode when insert the cassette tape. Using the Head demagnetizer, demagnetize the head and clean the pinch roller and head.

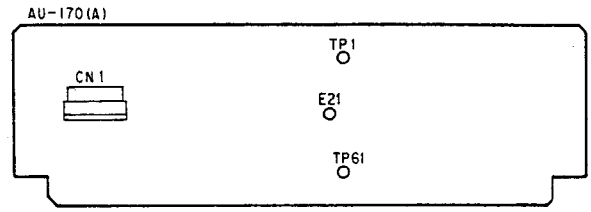
A. When the playback amplifier (AU-170) in CCP-2300 is used.

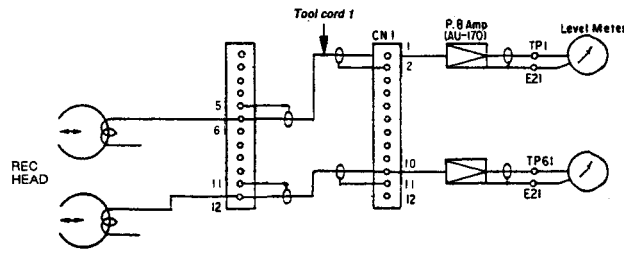
Test Equipment : Tool Cord 1
Test Tape (P-4-A100)
Level Meter
CCP-2300

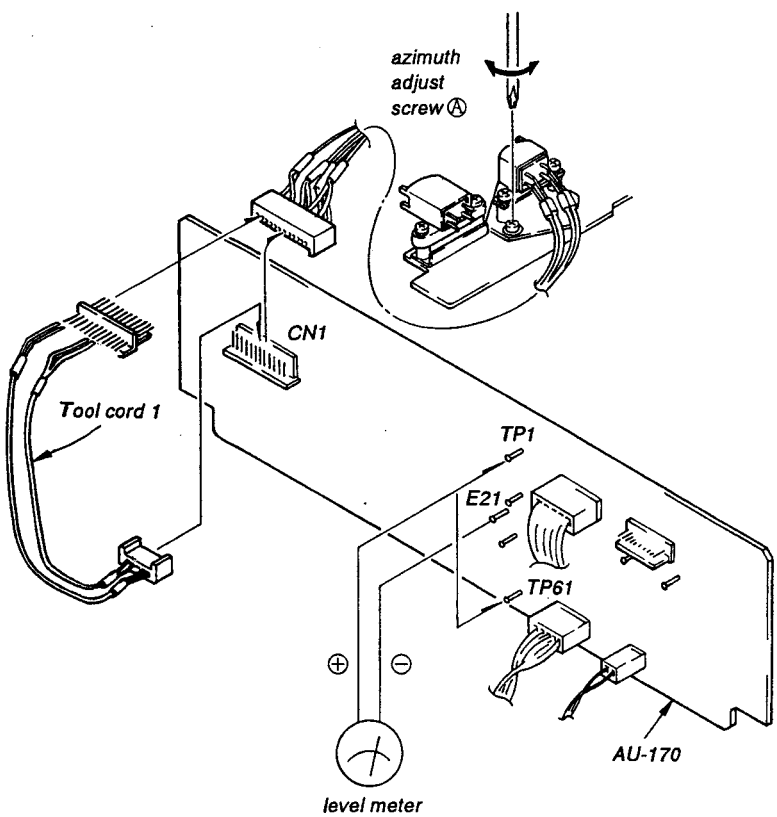
Procedure:

* 1. Disconnect the connector CN1 from the original head (playback) on the AU-170.
* 2. Connect the connector on the head to be adjusted to the tool cord 1, then connect another end to the connector CN1 on the AU-170 board.
3. Connect a "+" terminal of level meter to TP1 or TP61 on the AU-170 board, and "−" terminal of level meter to E21 on the AU-170 board.
4. Insert the test tape (P-4-A100) into the deck to be adjusted.
5. Activate the service mode, press the AUTO COPY button to activate the playback status.
6. Adjust the azimuth adjust screw Ⓐ so that reading of both level meters output level (TP1 and TP61) become the maximum.

Note : The items marked * are not necessary for P. B. head adjustment.



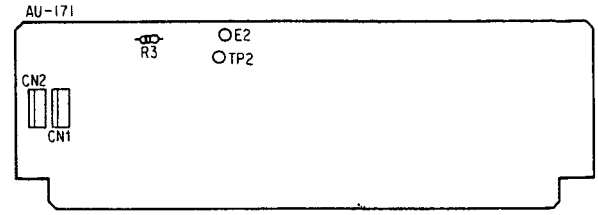


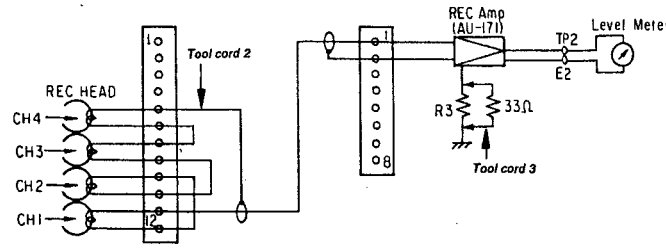


B. There is no CCP-2300.
Test Equipment : Tool Cord 2
Tool Cord 3
Test Tape (P-4-A100)
Level Meter

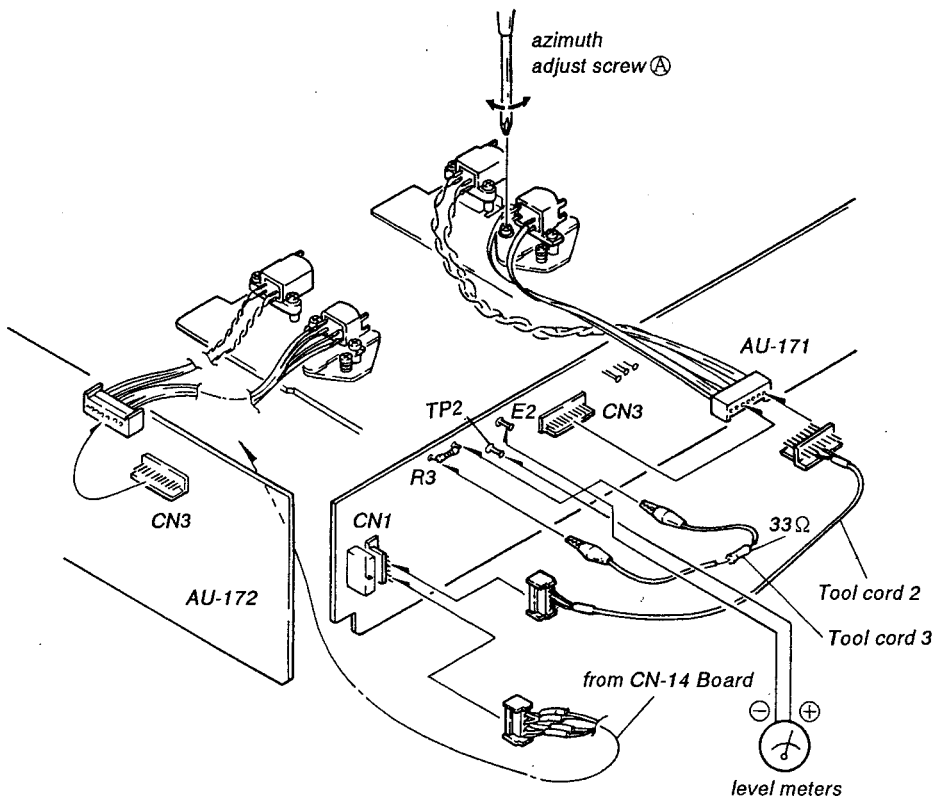
Procedure:

1. Disconnect connectors on each head the AU-171 and AU-172 board.
2. Disconnect the connecting cable to CN1 on the AU-171 board from CN-14 board.
3. Connect the connector on the head to be adjusted to the tool cord 2, and connect another end to CN1 on the AU-171 board.
4. Connect each side of the tool cord 3 (resistance 33 Ω) to R3 in parallel.
5. Insert the test tape (P-4-A100) into the deck to be adjusted.
6. Connect a "+" terminal of level meter to TP2 on the AU-171 board, and "−" terminal of level meter to E21 on the AU-171 board.
7. Activate the service mode, press the AUTO COPY button to activate the playback status.
8. Adjust the azimuth adjust screw Ⓐ so that reading of level meters become the maximum.





C. When the level meter on the CCP-2300 is used.
Test Equipment : Tool Cord 1 (at record head adjustment)
Test Tape (P-4-A100)
CCP-2300 (at record head of CCP-2400 adjustment)



Procedure:

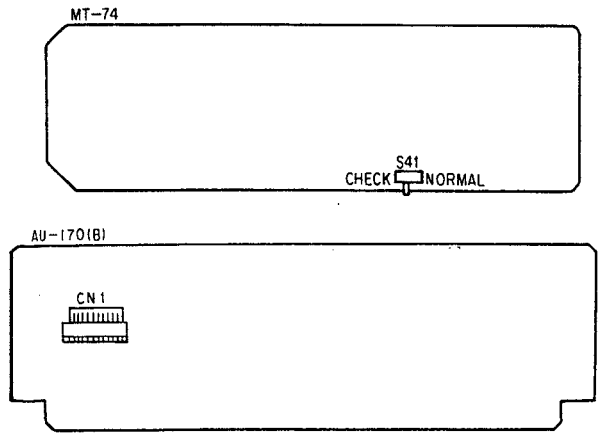
1. Change over the S41 on the meter board (MT-74) to CHECK side.

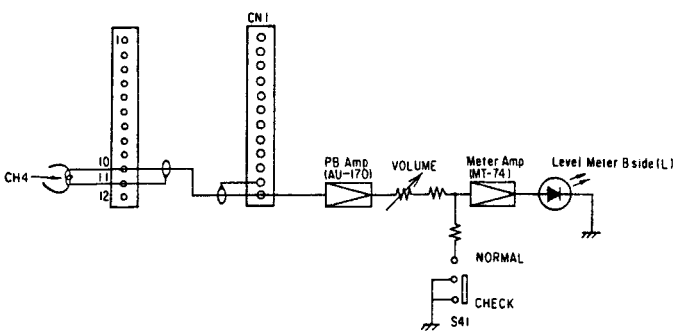
*2. Disconnect the connector CN1 from the original head (playback) on the AU-170.

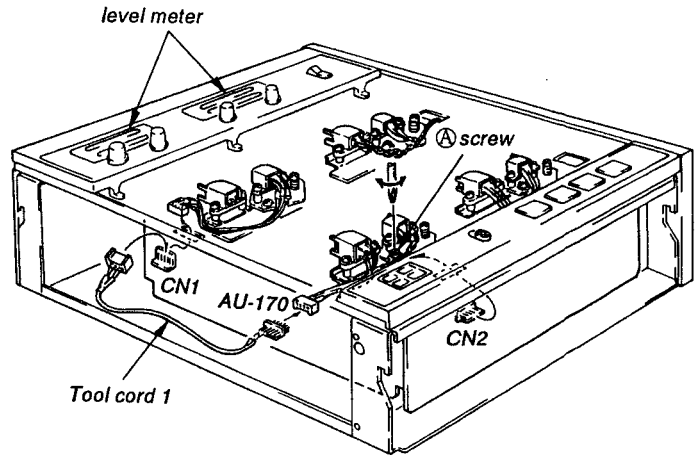
*3. Connect the connector on the head to be adjusted to the tool cord 1, then connect another end to the connector CN1 on the AU-170 board.

4. Insert the test tape (P-4-A100) into the deck to be adjusted.
5. Activate the service mode, press the AUTO COPY button to activate the playback status.
6. Adjust the azimuth adjust screw Ⓐ so that reading of left level meters at B side become the maximum.
   (Since fine adjustment is posible where the level meter is around 0dB, rotate to azimuth adjust screw Ⓐ while adjusting the VOLUME so that the playback level of 10kHz is about 0dB.)
7. After adjustment, return the S41 on the meter board (MT-74) from CHECK side to NORMAL side with the S41 in CHECK position, the level is raised by about 20dB so that a weak signal from the head can be indicated on the meter.

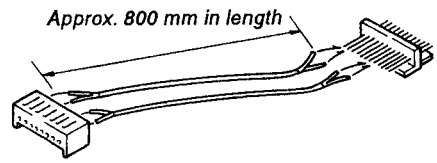
Note : The items marked * are not necessary for P. B. head adjustment.

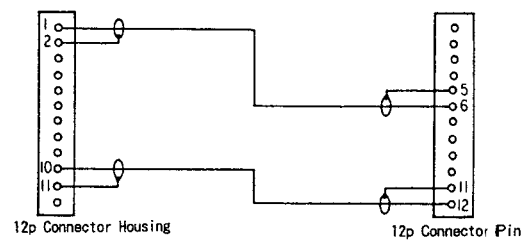




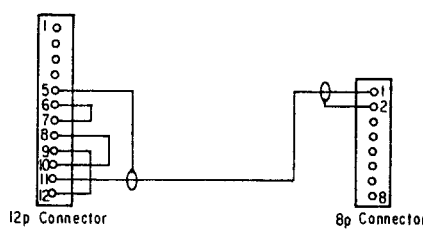


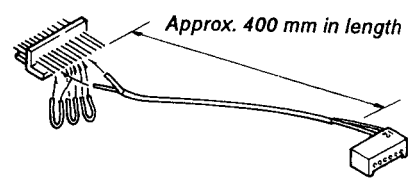
How to making tool cord 1



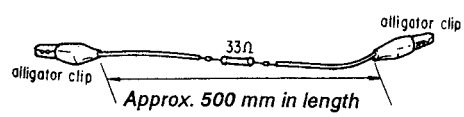


How to making tool cord 2





How to making tool cord 3



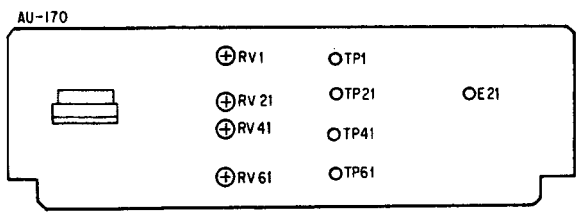
4-5. ADJUSTMENT OF PLAYBACK LEVEL (CCP-2300 ONLY)

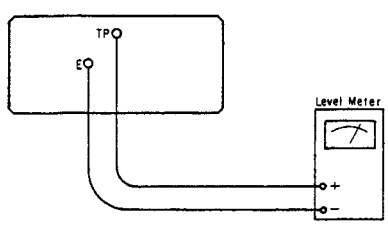
Test Equipment : Head Eraser
Level Meter
Test Tape (P-4-L300)

Procedure:

1. Using the head demagnetizer, demagnetize the head and clean the pinch roller and head.
2. Set the playback level controls (RV1, RV21, RV41 and RV61 on the MT-74 board) to the center.
3. Turn the power switch ON.
4. Set the SIDE selector to "A + B".
5. Insert the test tape (P-4-L300) on the original side.
6. Press the COPY button, then connect the terminal of level meter to following each test point on the AU-170 board. Adjust the RV associated with each test point so that the output become 0dB ±0.5dB.

Board	CH	Level Meter Connection		Adjust
		+ Terminal	− Terminal	
AU-170	CH1	TP1	E21	RV1
	CH2	TP2	E21	RV21
	CH3	TP41	E21	RV41
	CH4	TP61	E21	RV61





4-6. ADJUSTMENT OF FREQUENCY CHARACTERISTICS (CCP-2300 ONLY)

Test Equipment Level Meter
Test Tape P-4-L300
P-4-A063
P-4-A100

Note: Before this adjustment, adjustment of playback level must has been finished.

Procedure:

(315Hz)

1. Insert the test tape (P-4-L300) on the original side, then press the COPY button and measure the playback output level.

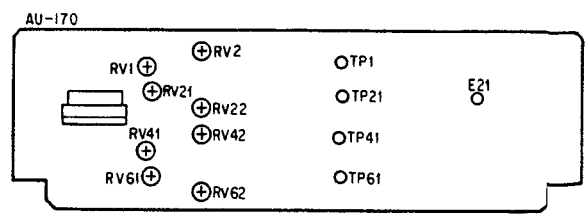
(6.3kHz)

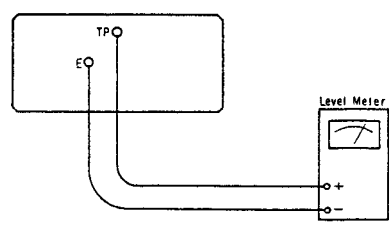
2. Insert the test tape (P-4-A063) on the original side, then press the COPY button and measure the playback output level.

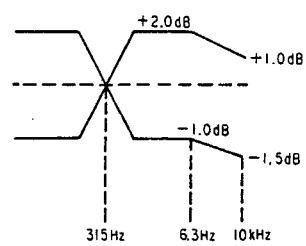
(10kHz)

3. Insert the test tape (P-4-A100) on the original side, then press the COPY button and measure the playback output level.
4. If the playback output level is out of specification, and adjust the RV associated with each test point.

Board	CH	Level Meter Connection		Adjust	
		+ Terminal	− Terminal	6.3kHz	10kHz
AU-170	CH1	TP1	E21	RV2	RV1
	CH2	TP21	E21	RV22	RV21
	CH3	TP41	E21	RV42	RV41
	CH4	TP61	E21	RV62	RV61







4-7. BIAS FREQUENCY ADJUSTMENT (CCP-2300/2400)

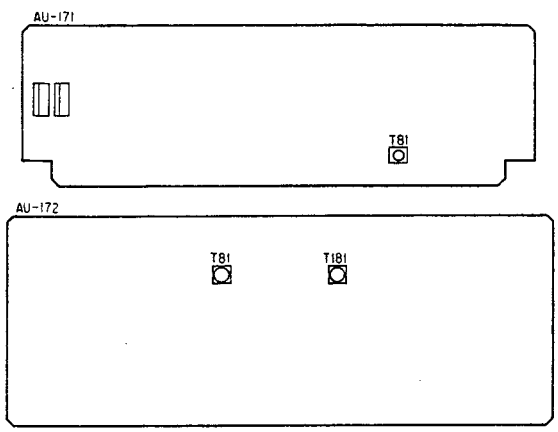
Test Equipment : Level Meter
Frequency Counter
Coil 10mH

Adjustment Point : T81 : AU-171 board
T81, T181 : AU-172 board

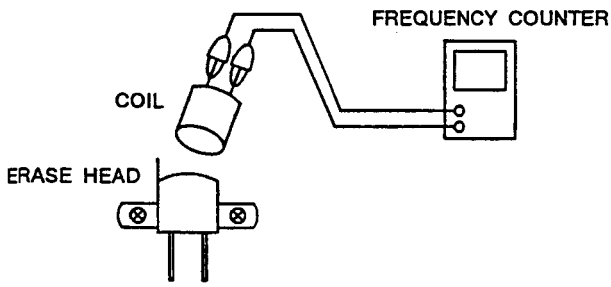
1. Connect the coil to the frequency counter.
2. Set the SIDE selector on the CCP-2300 to "A + B". In the case of CCP-2400 adjustment, the SIDE selector has already been in "A + B" status.
3. Activate the service mode, in the case of CCP-2400 adjustment, the service mode is activated by operating the switch on the SY-3 board indside the set.
   (DO NOT INSERT A CASSETTE. ⇨P-3-3)
4. Press the COPY button, and after 30 seconds, bring the coil closely to the erase head, then adjust the following bias transformers so that the bias frequency is in specification.

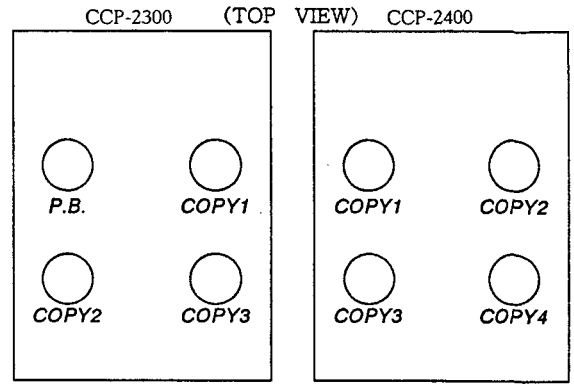
Note : Adjust the bias frequency equally on the AU-172 board. (There is a possibility that the difference of the bias frequency generates the beat noise.)

MODEL	BOARD	BIAS TRANSFER	COPY
CCP-2300	AU-171	T81	COPY 1
	AU-172	T81	COPY 2
		T181	COPY 3
CCP-2400	AU-171 (LEFT)	T81	COPY 1
	AU-171 (RIGHT)	T81	COPY 2
	AU-172	T81	COPY 3
		T181	COPY 4



Specification : 600 ± 6 kHz





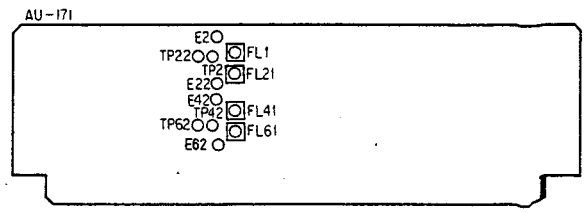
4-8. BIAS TRAP ADJUSTMENT (CCP-2300/2400)

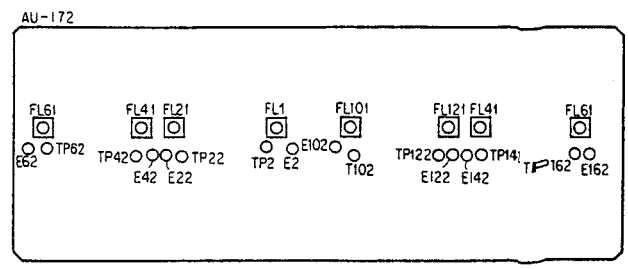
Test Equipment : Level Meter

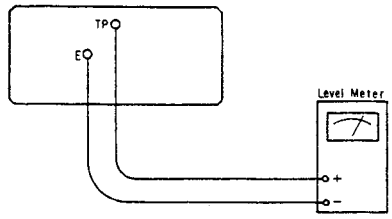
Procedure:

1. Set the SIDE selector on the CCP-2300 to "A + B". In the case of CCP-2400 adjustment, the SIDE selector has already been in "A + B" status.
2. Activate servcie mode is activated by operating to switch on the SY-3 board inside the set.
   (DO NOT INSERT A CASSETTE. ⇨P3-3)
3. Press the COPY button, then connect the terminal of level meter to following each test point on the AU-171 and AU-172 board. And adjust the bias trap associated with the test point so that the output become the minimum.

Board	CCP-2300	CCP-2400	CH	Level Meter Connection		Adjust
				+Terminal	-Terminal	
AU-171	COPY 1	COPY 1, 2	CH1	TP2	E2	FL1
			CH2	TP22	E22	FL21
			CH3	TP42	E42	FL41
			CH4	TP62	E62	FL61
AU-172	COPY 2	COPY 3	CH1	TP2	E2	FL1
			CH2	TP22	E22	FL21
			CH3	TP42	E42	FL41
			CH4	TP62	E62	FL61
	COPY 3	COPY 4	CH1	TP102	E102	FL101
			CH2	TP122	E122	FL121
			CH3	TP142	E142	FL141
			CH4	TP162	E162	FL161







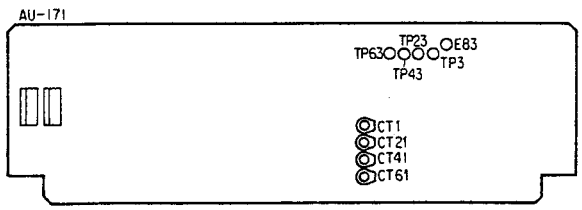
4-9. BIAS CURRENT PRE-ADJUSTMENT (CCP-2300/2400)

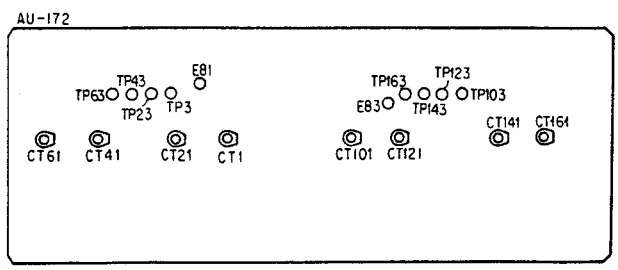
Test Equipment : Voltmeter

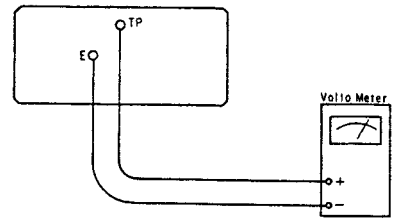
Procedure:

1. Active the service mode. In the case of CCP-2400 adjustment, the service mode is activated by operating the switch on the SY-3 board inside the set.
   (DO NOT INSERT A CASSETTE. ⇨P3-3)
2. Press the COPY button, connect the voltmeter to the following test points on the AU-171 and AU-172 board, and adjust the trimmer capacitor associated with the test point so that the output become 30 ± 3mV.

Board	CCP-2300	CCP-2400	CH	Level Meter Connection		Adjust
				+Terminal	-Terminal	
AU-171	COPY 1	COPY 1, 2	CH1	TP3	E83	CT1
			CH2	TP23	E83	CT21
			CH3	TP43	E83	CT41
			CH4	TP63	E83	CT61
AU-172	COPY 2	COPY 3	CH1	TP3	E81	CT1
			CH2	TP23	E81	CT21
			CH3	TP43	E81	CT41
			CH4	TP63	E81	CT61
	COPY 3	COPY 4	CH1	TP103	E83	CT101
			CH2	TP123	E83	CT121
			CH3	TP143	E83	CT141
			CH4	TP163	E83	CT161







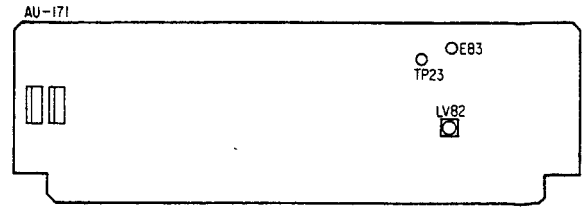
4-10. ADJUSTMENT OF ERASE HEAD DUMMY COIL (CCP-2300/2400)

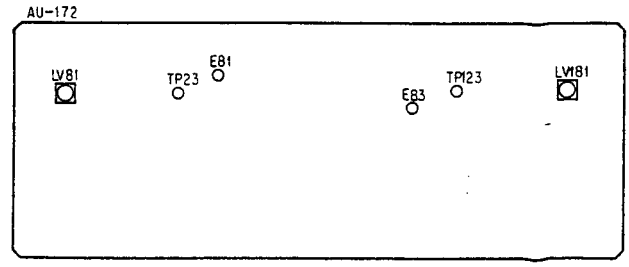
Test Equipment : Voltmeter

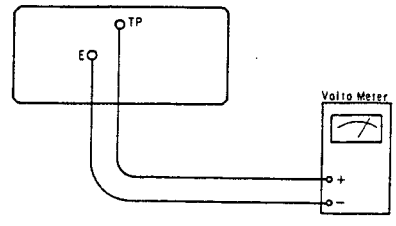
Procedure:

1. Set the SIDE selector on the CCP-2300 to "A + B". In the case of CCP-2400 adjustment, the SIDE selector has already in "A + B" status.
2. Activate the service mode is activated by operating the switch on the SY-3 board inside the set.
   (DO NOT INSERT A CASSETTE. ⇨P3-3)
3. Press the COPY button, Connect the terminal of voltmeter to each test point on the AU-171 and AU-172 board the measure voltage.
4. Next, set the SIDE selector to "A", and measure voltage at following test points associated with each COPY. Then, adjust the dummy coil so that difference between the measure voltage and the when the SIDE selector was in "A + B" status is within 3mV in the range.
   In the case of CCP-2400 adjustment, grounding the test point E83 on AU-172 board place the SIDE selector in the status "A". (Or status "A + B" if not grounding.)

Board	CCP-2300	CCP-2400	Level Meter Connection		Adjust
			+ Terminal	- Terminal	
AU-171	COPY 1	COPY 1, 2	TP23	E83	LV82
AU-172	COPY 2	COPY 3	TP23	E81	LV81
	COPY 3	COPY 4	TP123	E83	LT181







4-11. ADJUSTMENT OF RECORD LEVEL AND FREQUENCY CHARACTERISTICS

Before this adjustment, the bias current pre-adjustment must has been finished.

Test Equipment : Oscillator
Level Meter
Standard Cassette Player
Blank tape (60-minute)

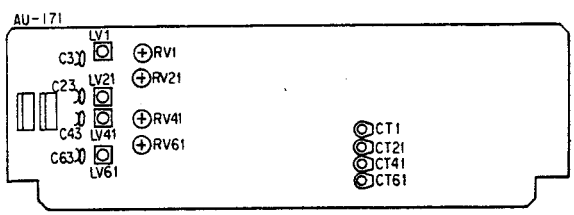
Procedure:

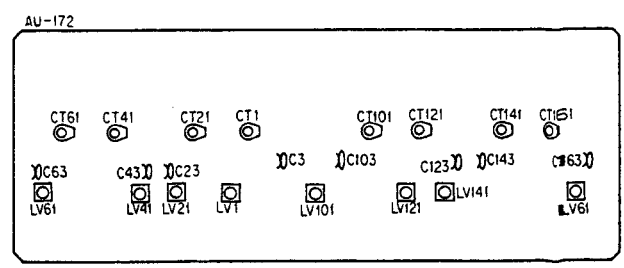
(Record level)

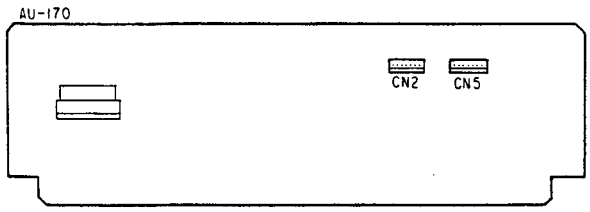
1. Disconnect the connector CN2 on the AU-170 board in the CCP-2300 and connect the CN5 instead.
2. Set the SIDE selector on the CCP-2300 to the "A + B".
3. Turn the POWER switch ON.
4. Insert a 60-minute tape to the ORIGINAL side of CCP-2300 and, blank tape for measurement to each COPY side.
5. Connect a "+" terminal of oscillator to TP2 on the AU-170 board and a "−" terminal of oscillator to E2 on the AU-170 board.
   Then press the COPY button while entering the 0dB 5kHz signal.
6. After copy, playback the copied tape with a standard cassette player and adjust each RV (on the AU-171 and AU-172 board) for record level adjustment so that the level is 0dB ± 0.5dB at 315Hz.
7. Check the phase and confirm that it is matching.
8. Next, SIDE selector to "A" and repeat step 5~7.
   (Record frequency characteristics)
9. With the oscillator connection maintainned, press the COPY button while entering the following signals.
   − 20dB 5kHz
   − 20dB 100.8kHz
   20dB 160kHz
10. Then, playback the copied tape with a standard cassette player, and repeat adjustment and replacement of adjust capacitor, coil and trimmer capacitor so that the level is each frequency satisfies the specification.

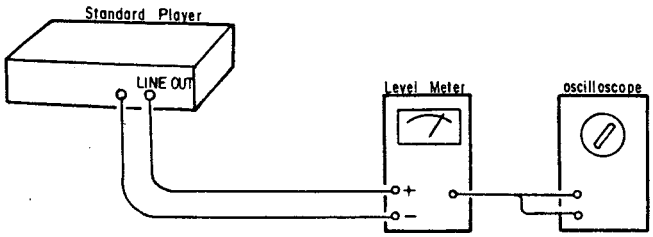
Note : Standard cassette player
High quality and finished adjustment cassette player.

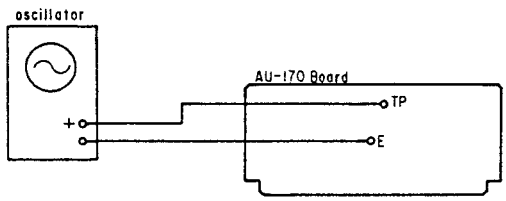
Board	CCP-2300	CCP-2400	CH	ADJUST POINT			
				LEVEL	FREQUENCY		
					6.3kHz	10kHz	both
AU-171	COPY 1	COPY 1 COPY 2	CH1	RV1	C3	LV1	CT1
			CH2	RV21	C23	LV21	CT21
			CH3	RV41	C43	LV41	CT41
			CH4	RV61	C63	LV61	CT61
AU-172	COPY 2	COPY 3	CH1	RV1	C3	LV1	CT1
			CH2	RV21	C23	LV21	CT21
			CH3	RV41	C43	LV41	CT41
			CH4	RV61	C63	LV61	CT61
	COPY 3	COPY 4	CH1	RV101	C103	LV101	CT101
			CH2	RV121	C123	LV121	CT121
			CH3	RV141	C143	LV141	CT141
			CH4	RV161	C163	LV161	CT161

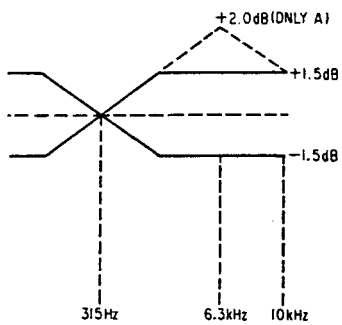





AU-170
CN2
CN5

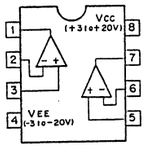

Standard Player
LINE OUT
Level Meter
oscilloscope
+
-


oscillator
AU-170 Board
TP
E
+


+2.0dB(ONLY A)
+1.5dB
-1.5dB
315Hz
6.3kHz
10kHz

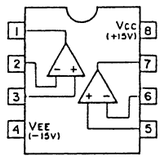
SECTION 5
SEMICONDUCTORS

NE5532P (TI)

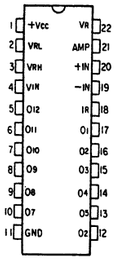


μPC4556C (NEC)

OPERATIONAL AMPLIFIER
(WIDE BAND, DECOMPENSATED)
– TOP VIEW –

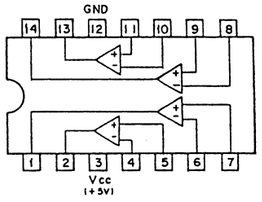


1R2E30 (SHARP)



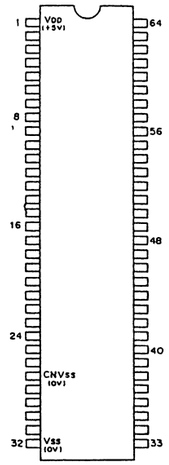
LM339N (TI)

COMPARATOR
– TOP VIEW –



M50747-XXXSP (FUJITSU)

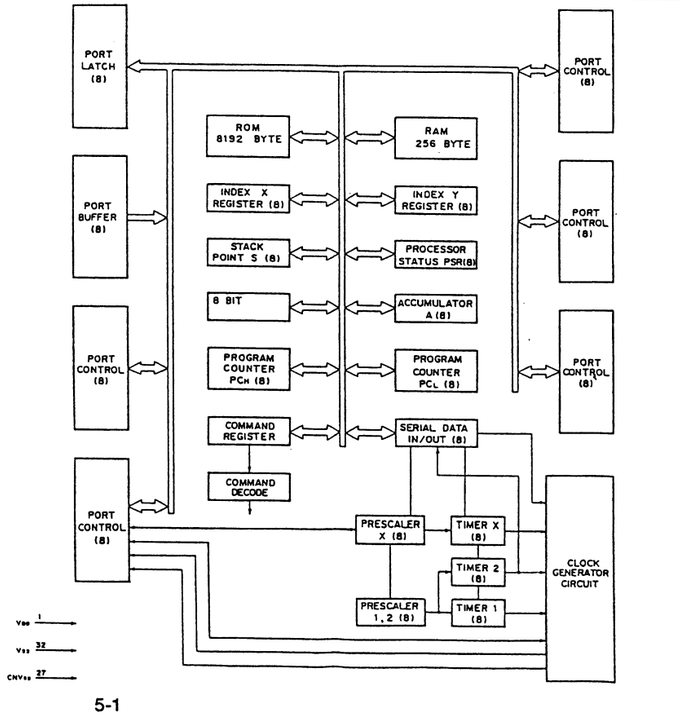
C-MOS PROCESS 8-BIT ONE CHIP MICROCOMPUTER
– TOP VIEW –



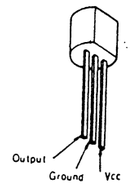
M50747 – xxx SP (1/2)

INT 1	; INTERRUPT 1 IN
P00–P07	; 8 BIT I/O PORT
P10–P17	;
P20–P27	;
P30–P37	;
P40–P47	;
P50–P57	; 8 BIT IN PORT
P60–P67	; 8 BIT OUT PORT
RESET	; RESET IN (‾_‾)
X IN/OUT	; CLOCK IN/OUT
φ	; CLOCK TIMING OUT
P32/INT2	; PORT/INTERRUP2 IN/; T
P33/CNTR	; PORT/CONTROL IN/OU
P34/RXD	; RECEIVED DATA
P35/TXD	; TRANCEMITTED DATA
P36/CLK	; PORT/CLOCK IN/OUT
P37/SRDY	; SERIAL IN READY

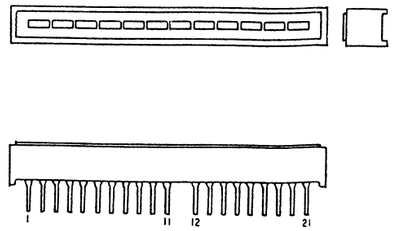
M50747 – xxx SP (2/2)



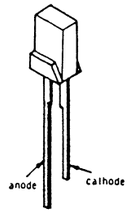
PST520 (MITSUMI)



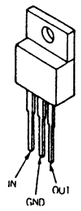
GL112F9

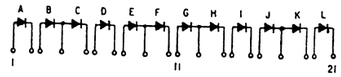


SEL1321G
SEL1121R



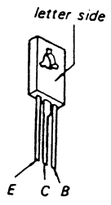
RC7805FA (RAYTHEON)
RC7812FA (RAYTHEON)
RC7912FA (RAYTHEON)



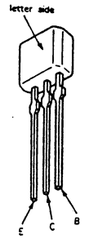


2SD774-34
2SD733-5

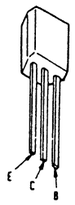
2SD998



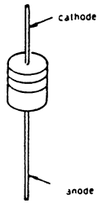
2SC2785-HFE



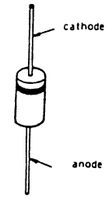
DTC114ES
DTA114ES
2SA1317-STU



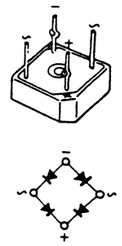
11ES1
1SS119



RD6.2EL2

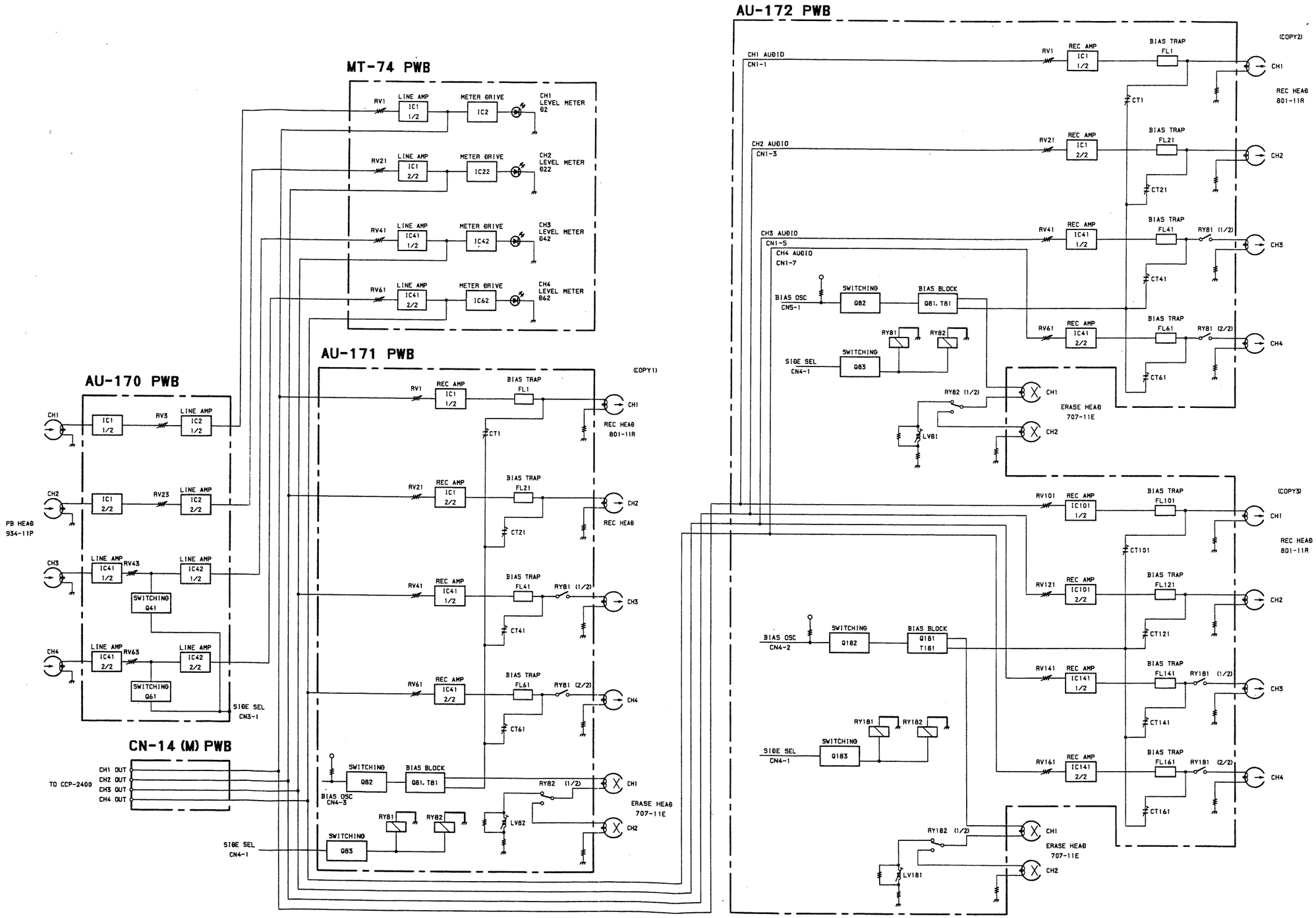


S5VB60

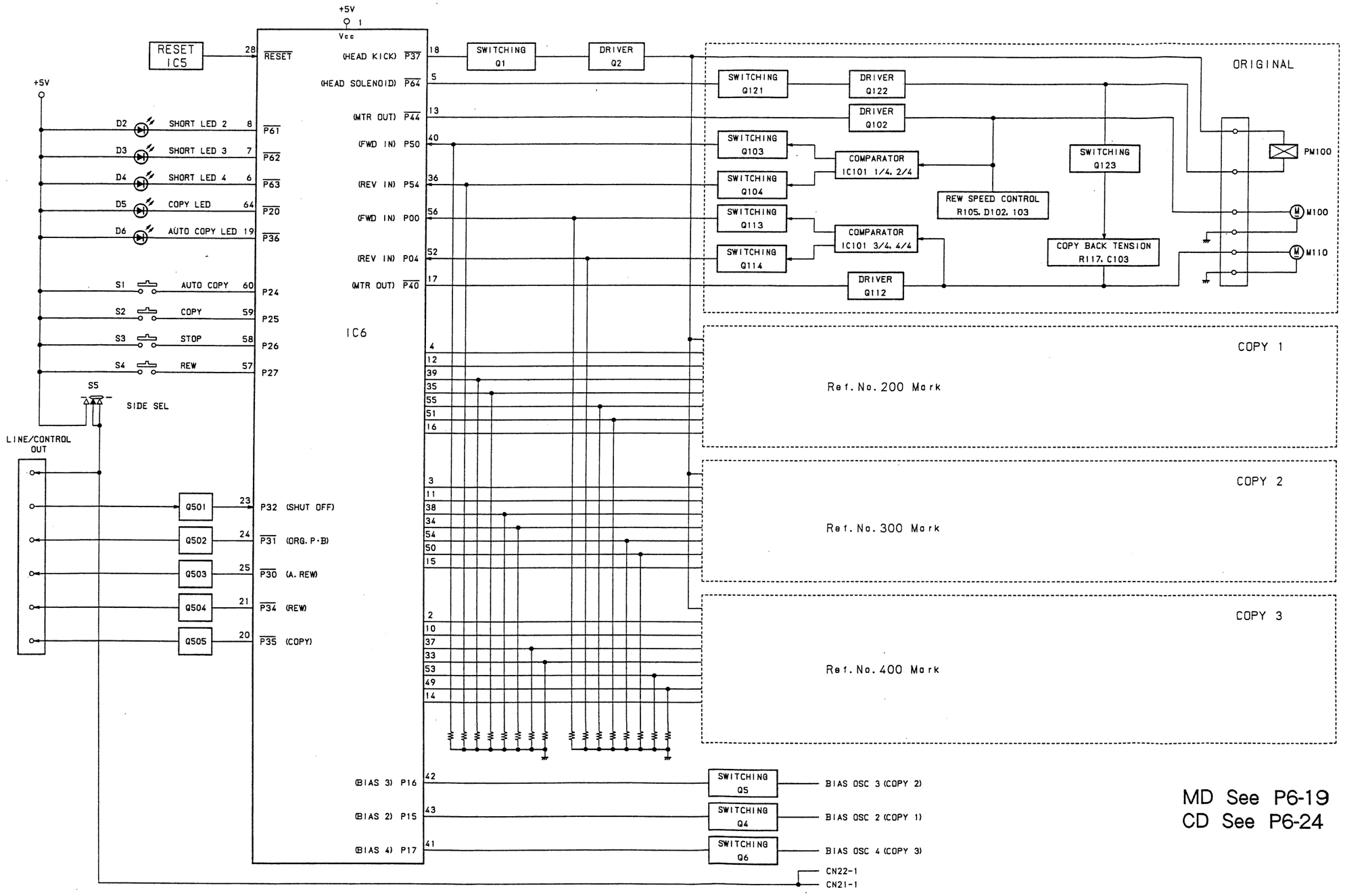


SECTION 6
CCP-2300 DIAGRAMS

6-1. BLOCK DIAGRAM (AUDIO)

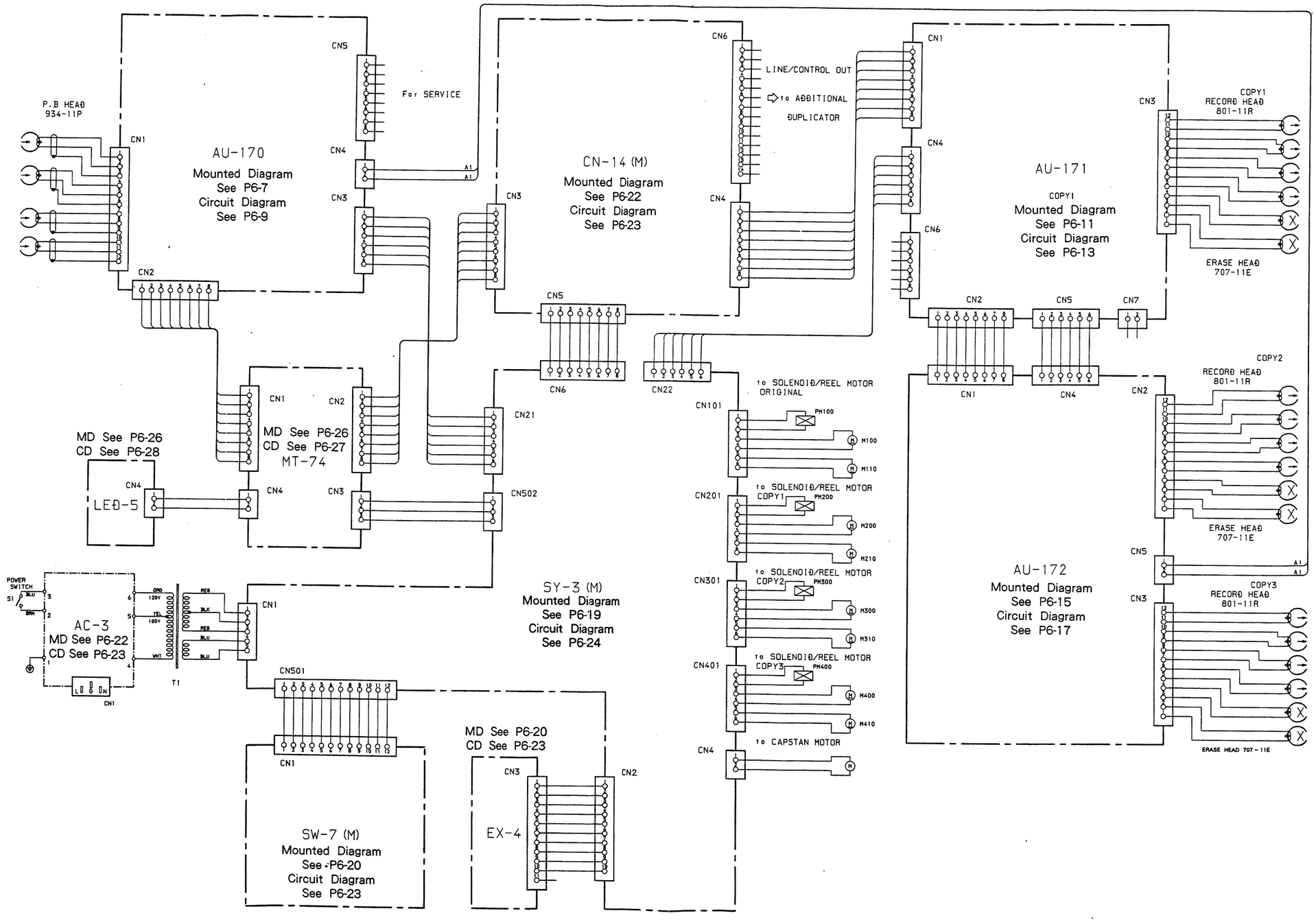


6-2. BLOCK DIAGRAM (SYSTEM)

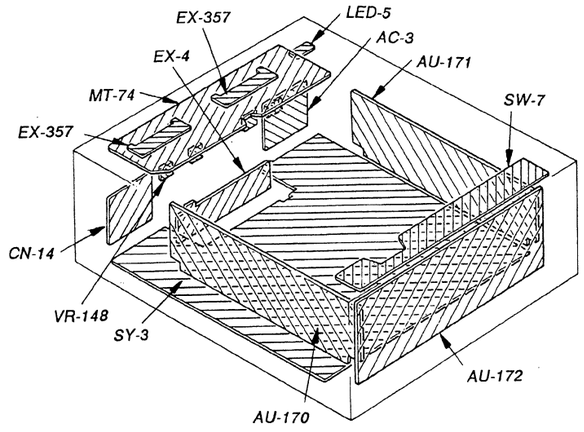


MD See P6-19
CD See P6-24

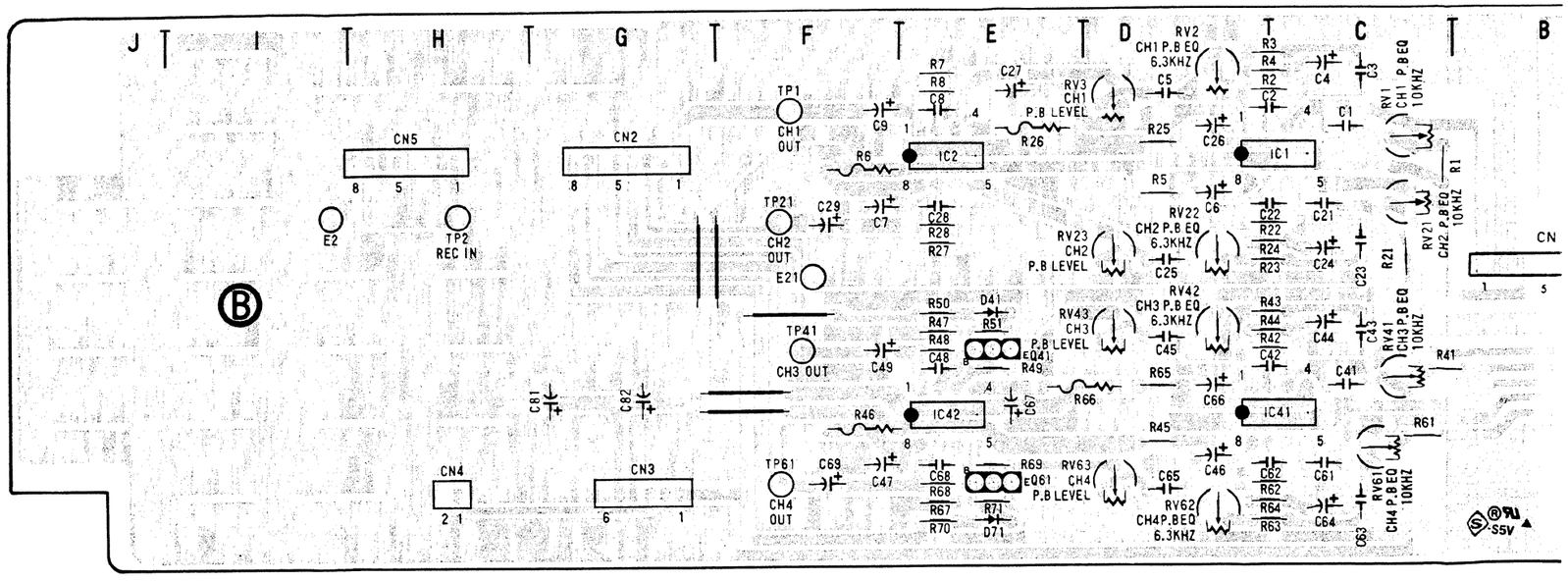
6-3. FRAME WIRING



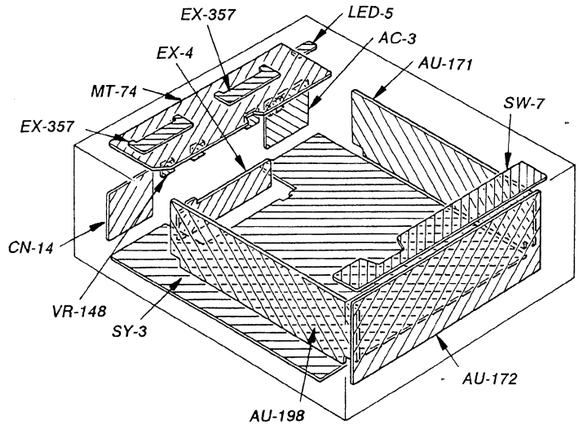
6-4. LOCATION OF THE PRINTED WIRING BOARD



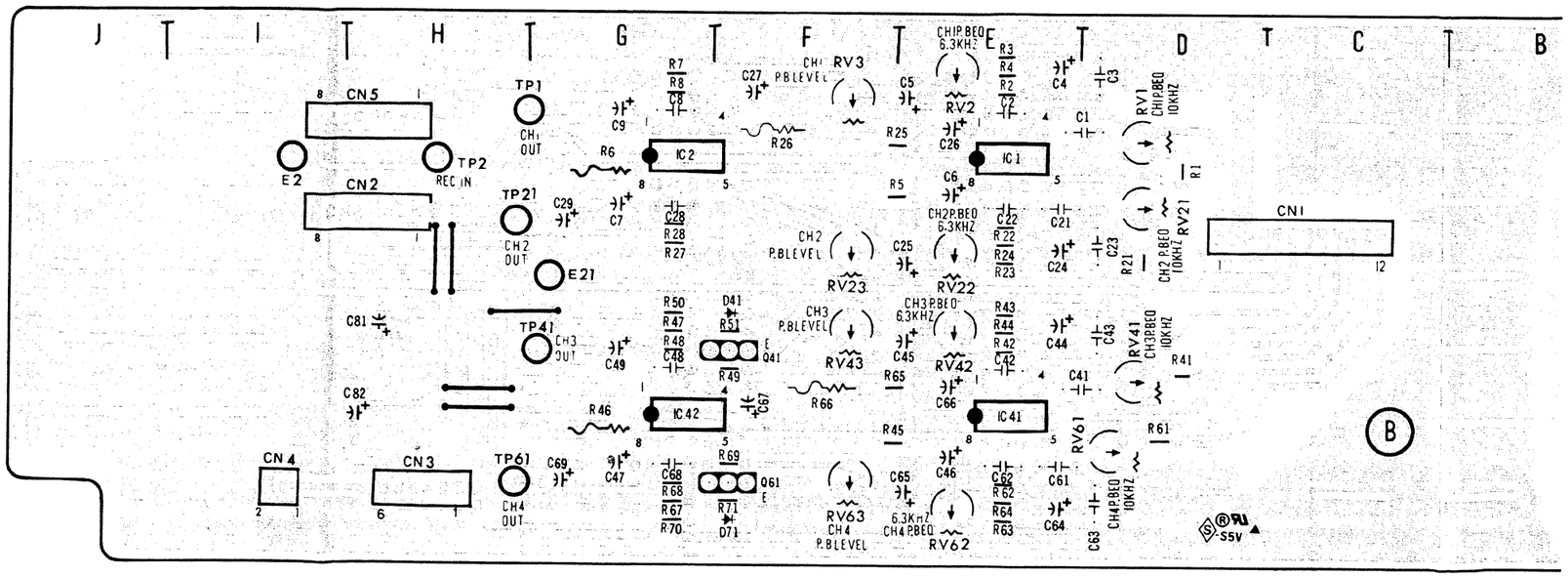
6-5. AU-170 BOARD – *Soldering Side* –



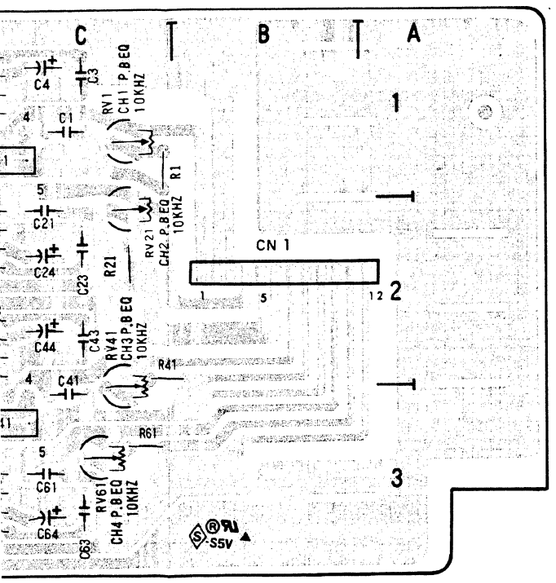
6-4. LOCATION OF THE PRINTED WIRING BOARD

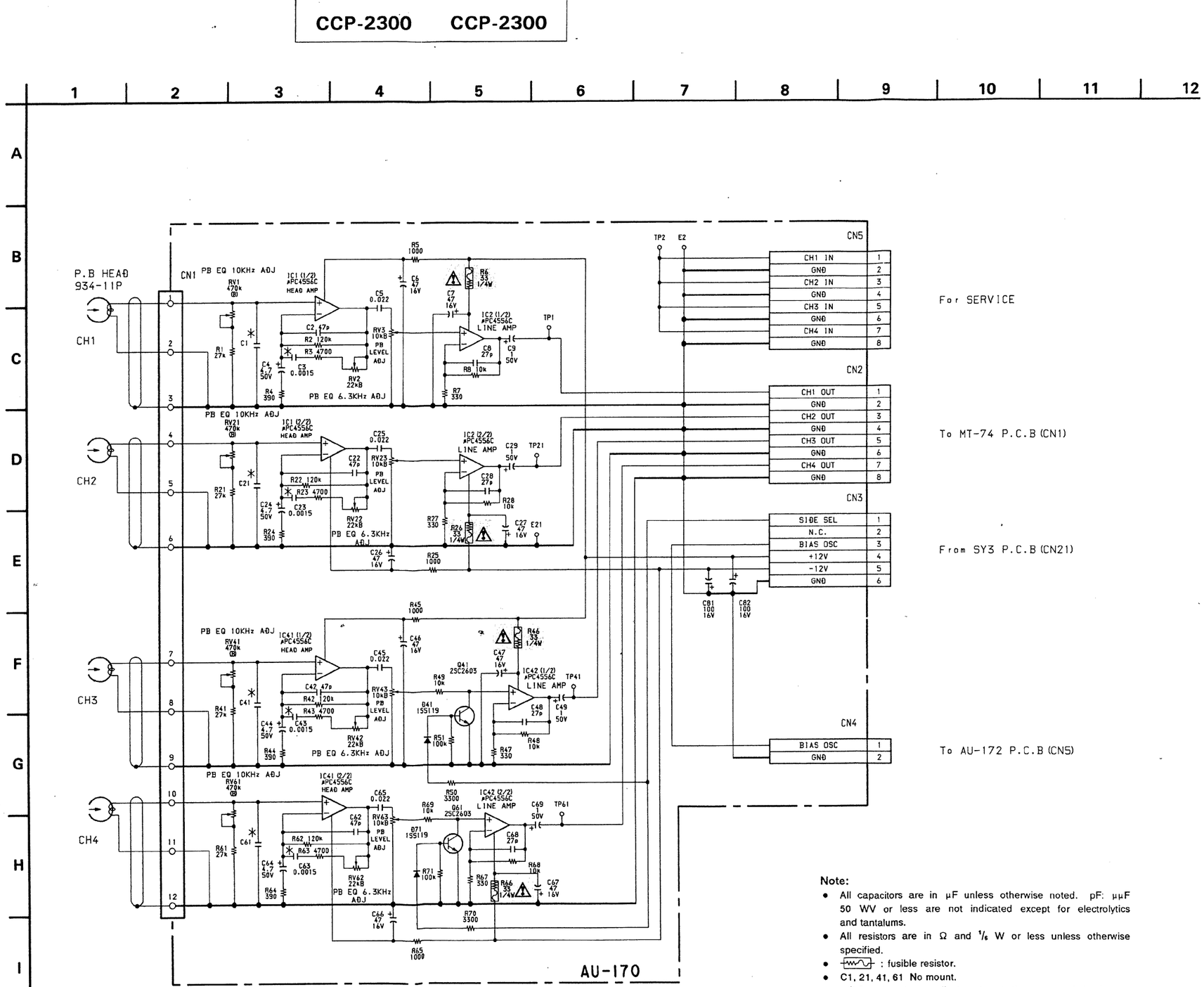


6-5. AU-198 BOARD (AU-170 MOUNT) – *Soldering Side* –



AU-
BO





For SERVICE

To MT-74 P.C.B (CN1)

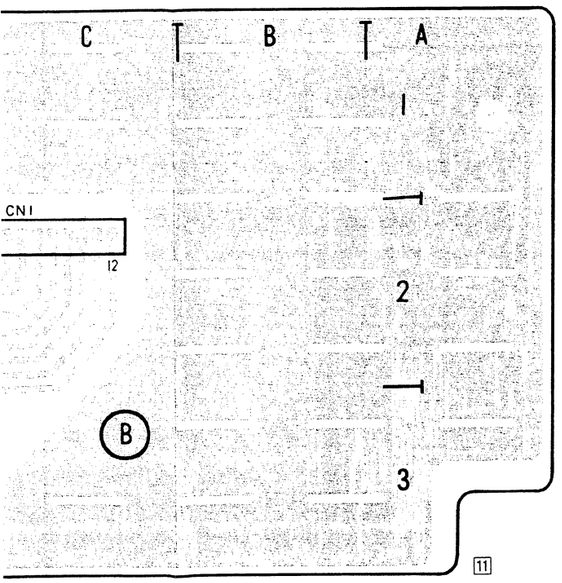
From SY3 P.C.B (CN21)

To AU-172 P.C.B (CN5)

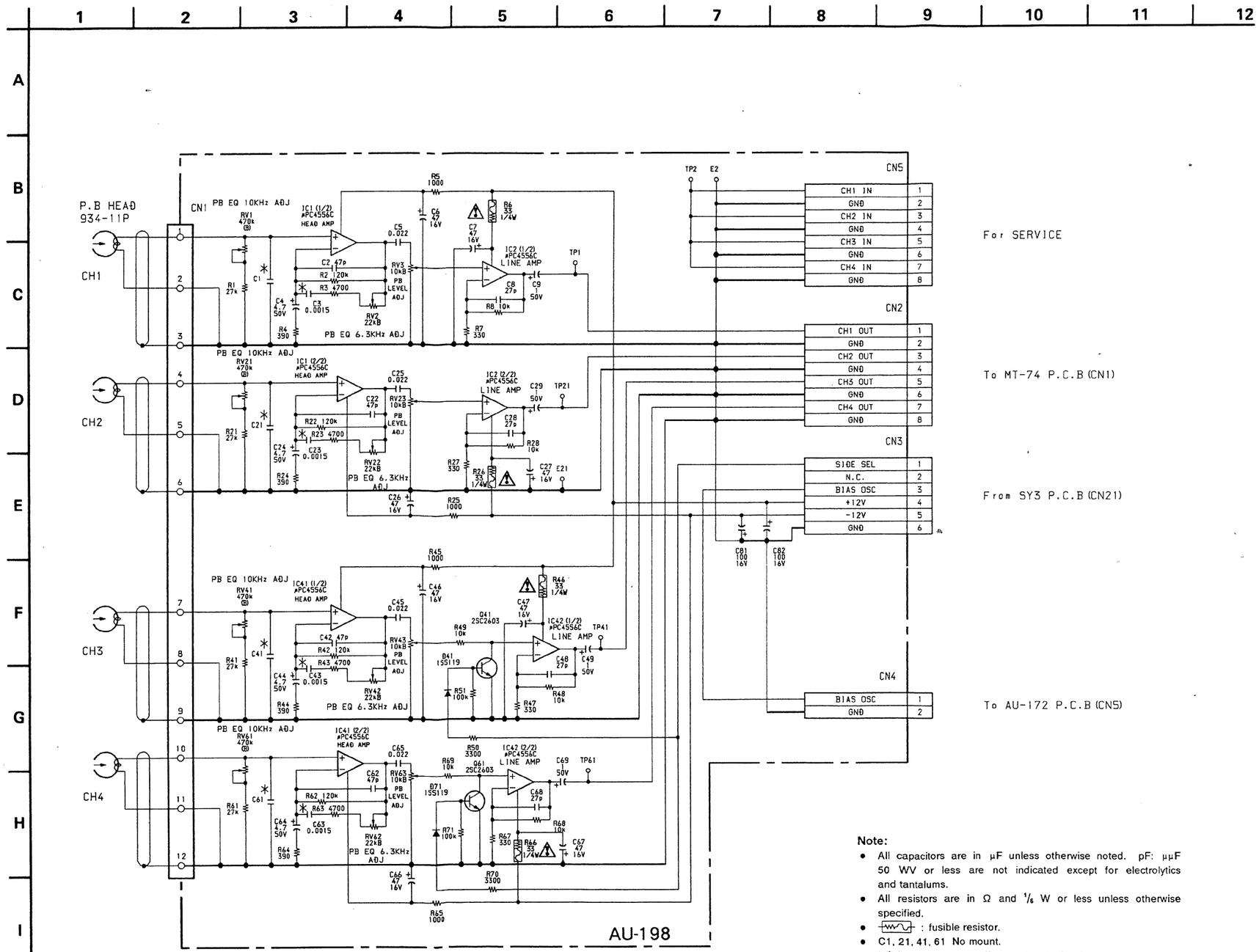
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.
- C1, 21, 41, 61 No mount.
- " * " mark parts are adjustment parts they have varied value.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



AU-198 BOARD
BOARD No. 1-650-604-11



For SERVICE

To MT-74 P.C.B (CN1)

From SY3 P.C.B (CN21)

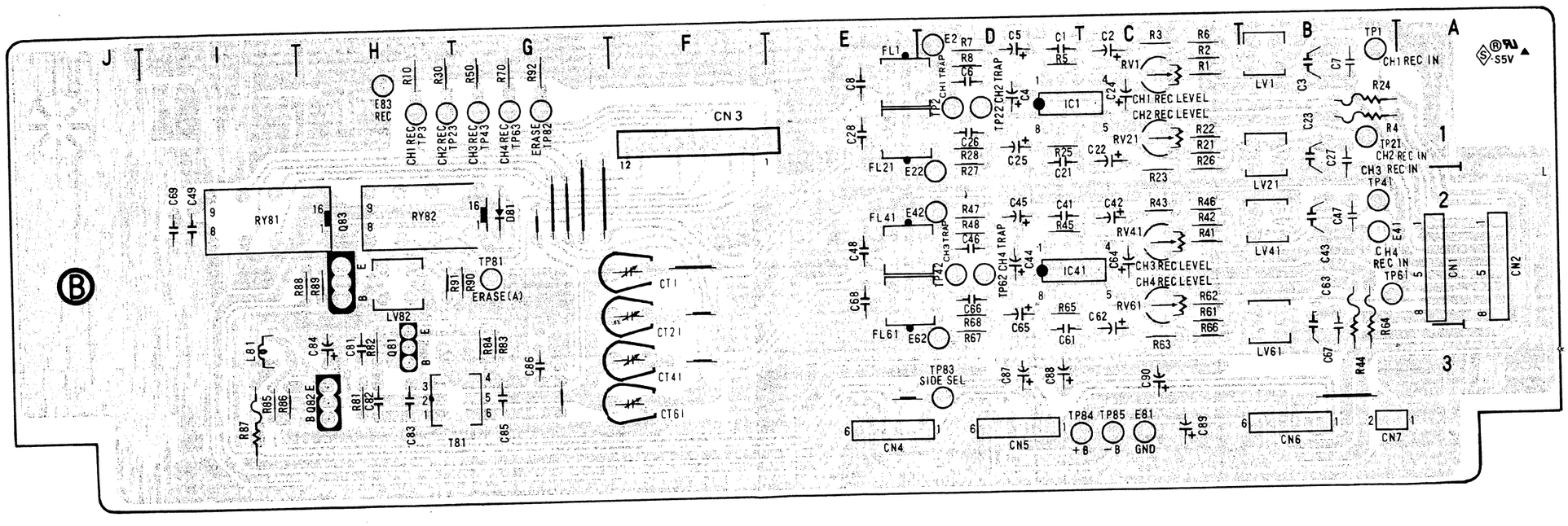
To AU-172 P.C.B (CN5)

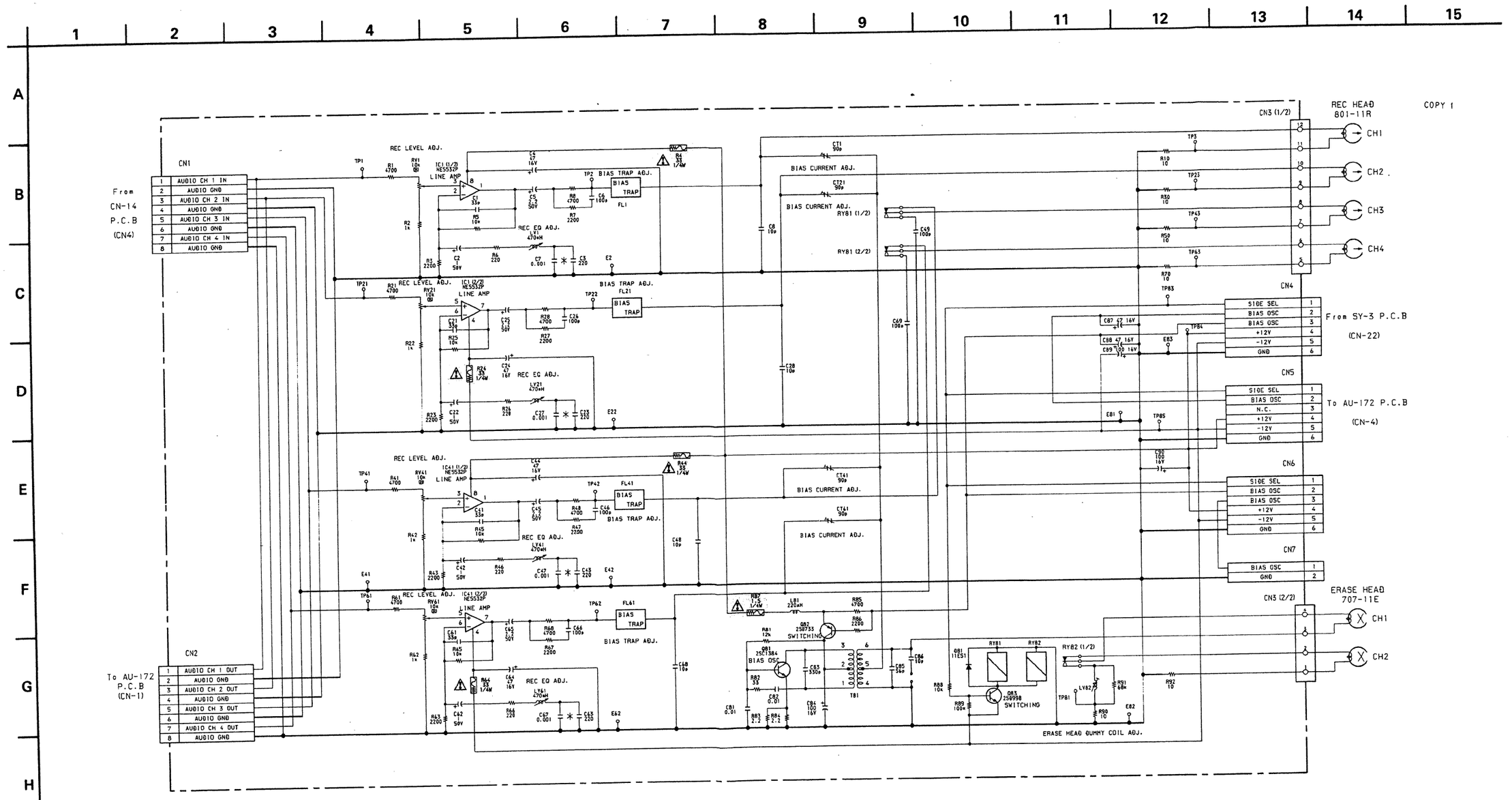
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.
- C1, 21, 41, 61 No mount.
- " * " mark parts are adjustment parts they have varied value.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

6-6. AU-171 BOARD – *Soldering Side* –



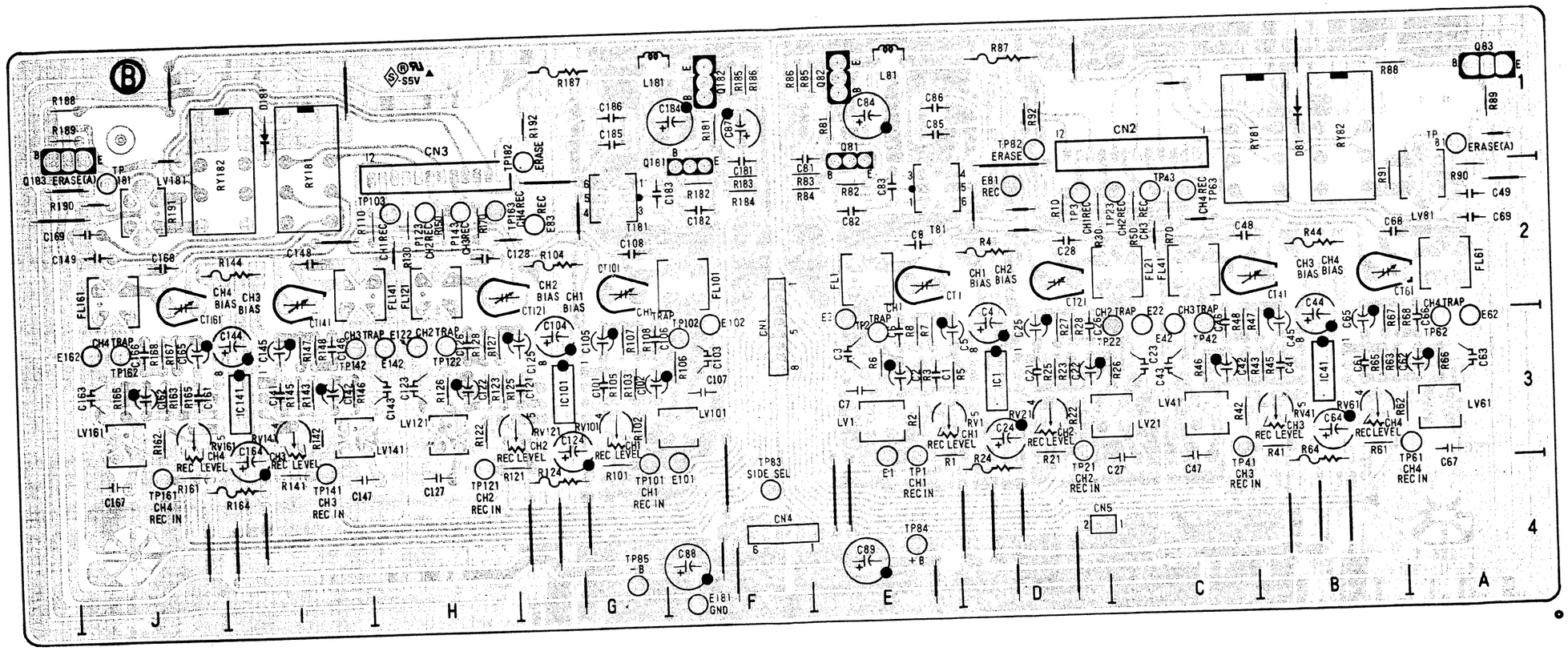


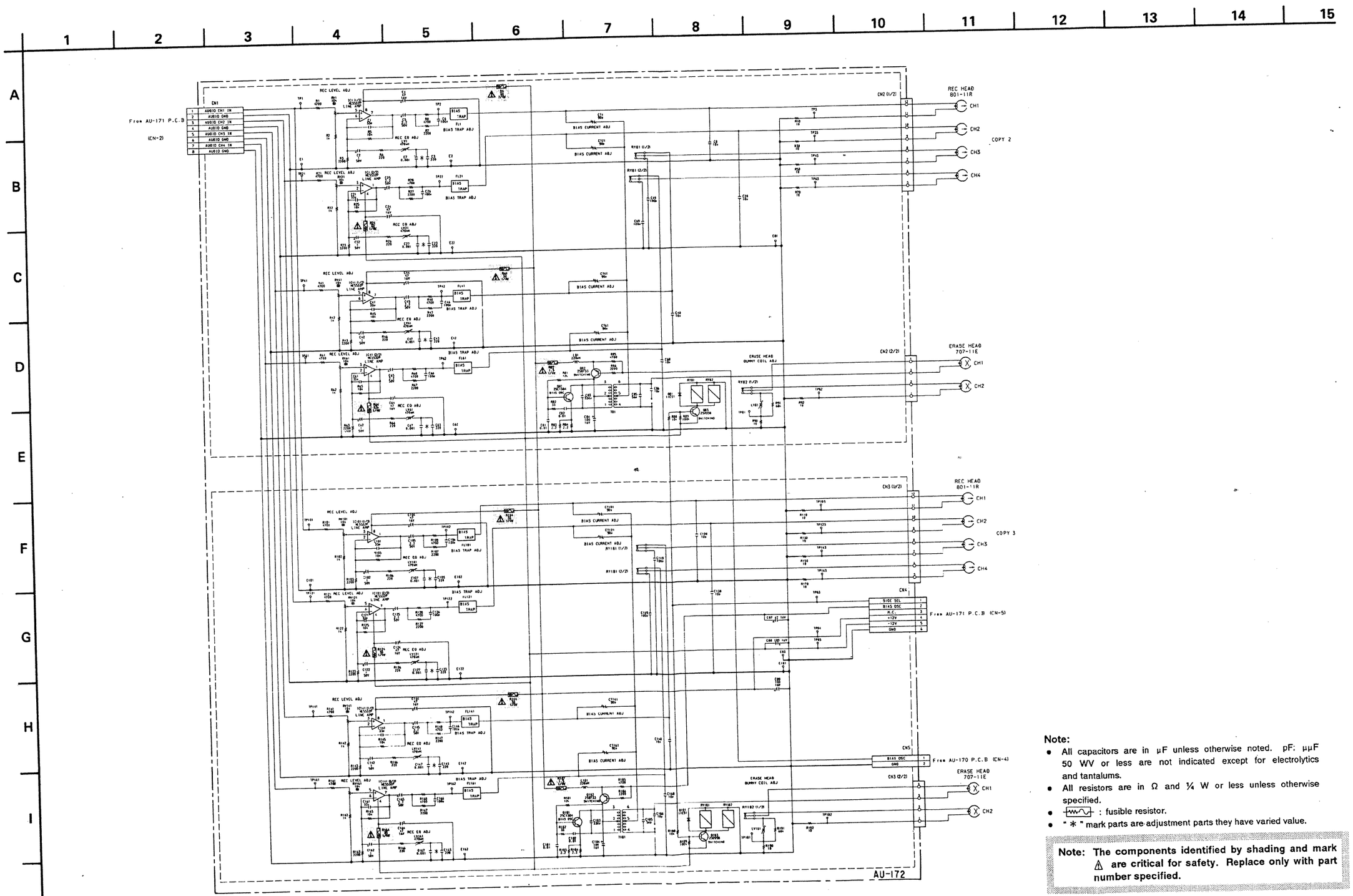
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.
- " * " mark parts are adjustment parts they have varied value.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

6-7. AU-172 BOARD – *Soldering Side* –





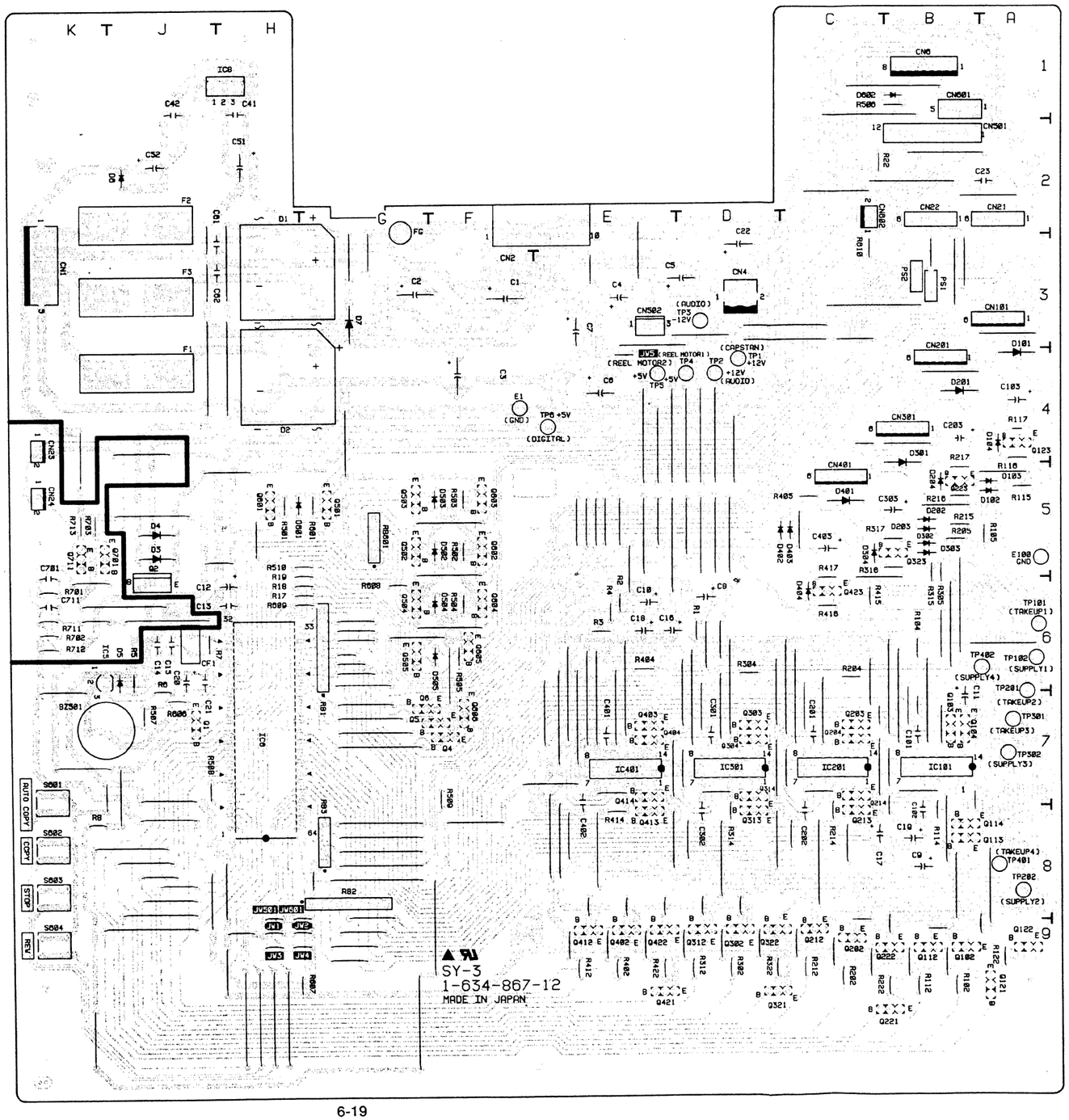
Note:

- All capacitors are in μF unless otherwise noted. pF; μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ⚠ : fusible resistor.
- " * " mark parts are adjustment parts they have varied value.

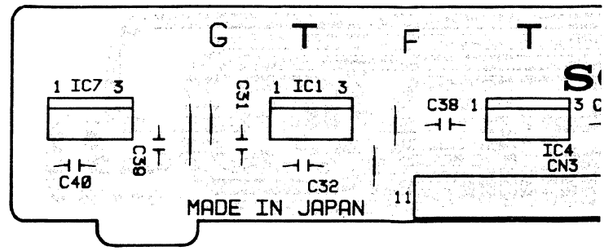
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

6-8. SY-3 (M), EX-4, SW-7 (M), CN-14 (M), AC-3 BOARDS – *Soldering Side* –

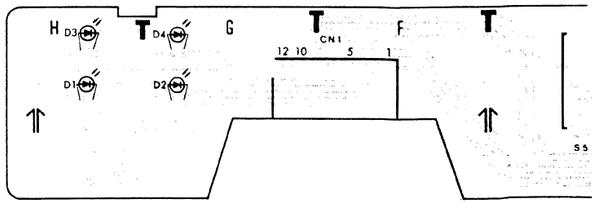
SY-3 (M) BOARD

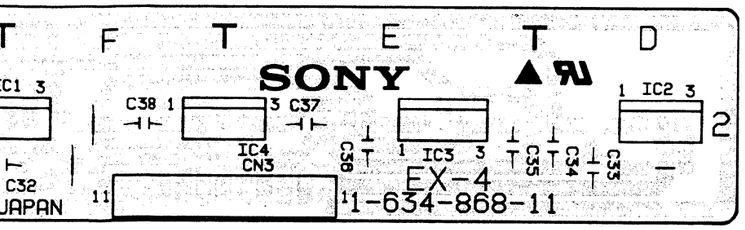


EX-4 BOARD

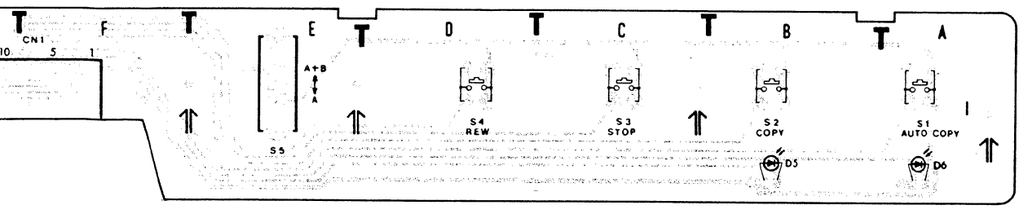


SW-7 (M) BOARD



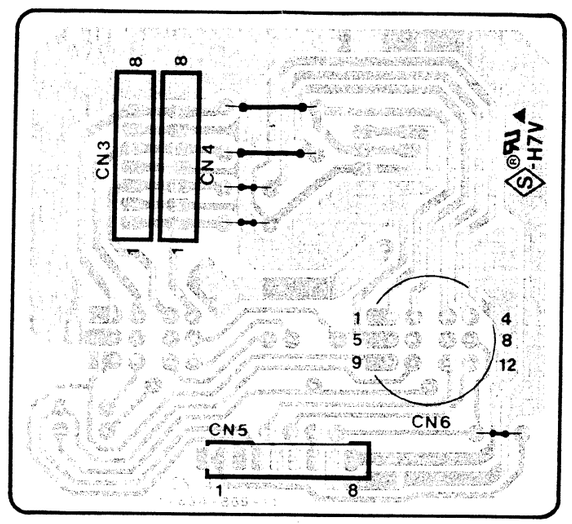


11



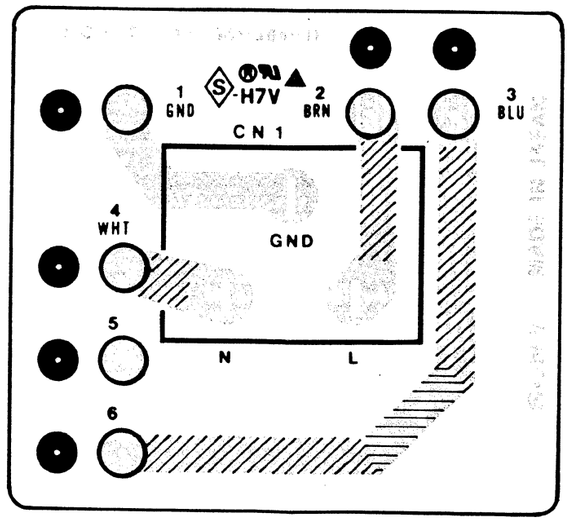
11

CN-14 (M) BOARD

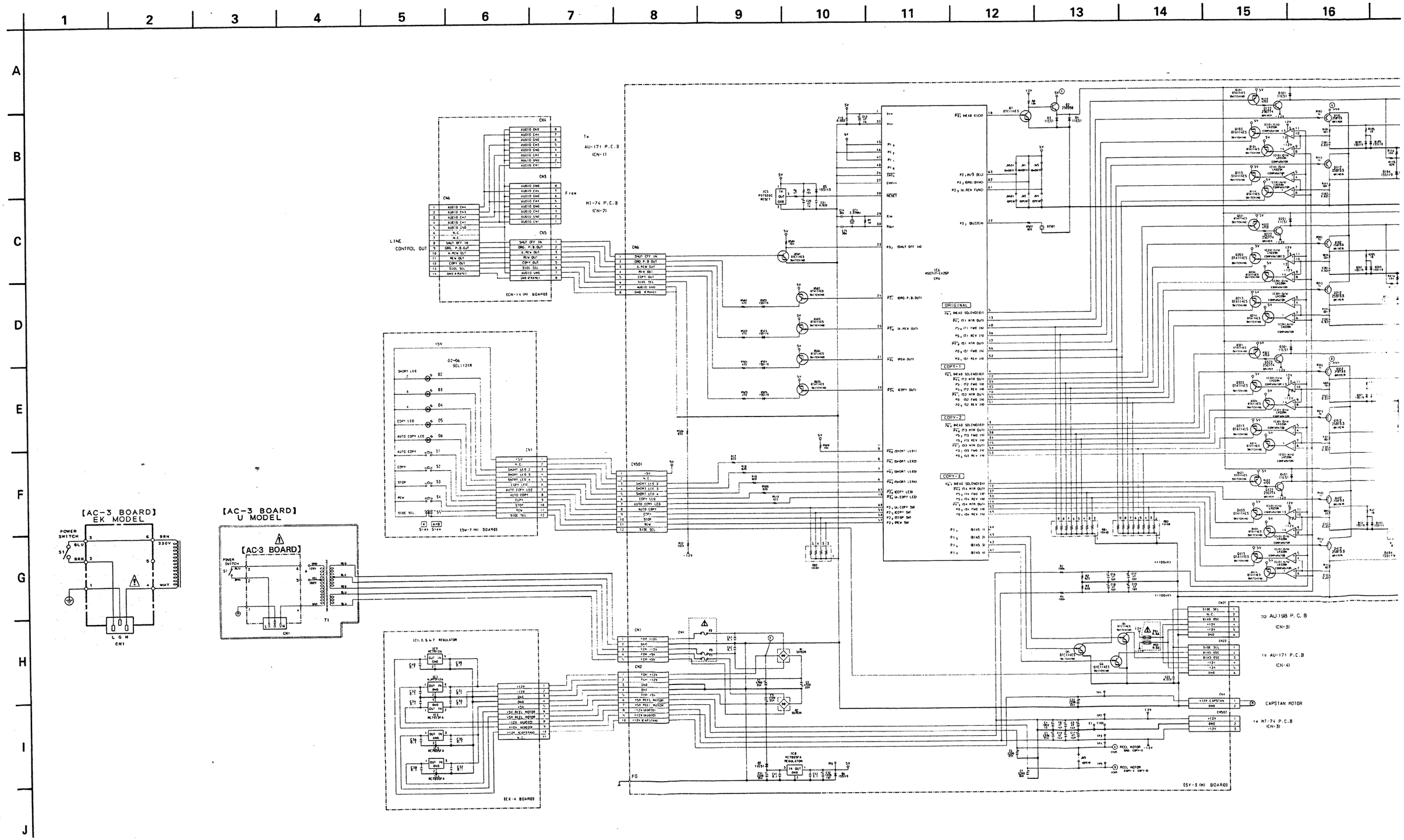


11

AC-3 BOARD

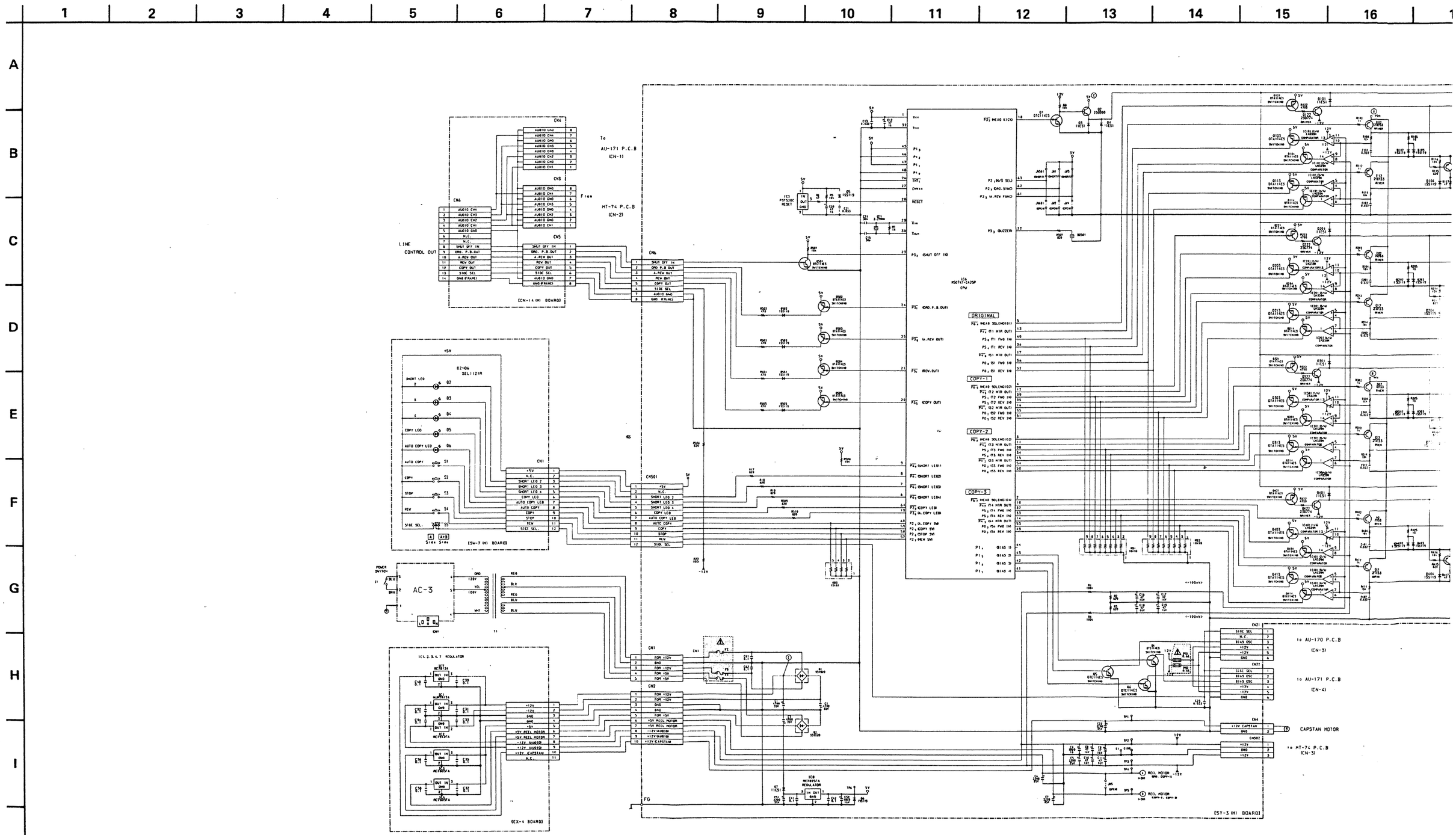


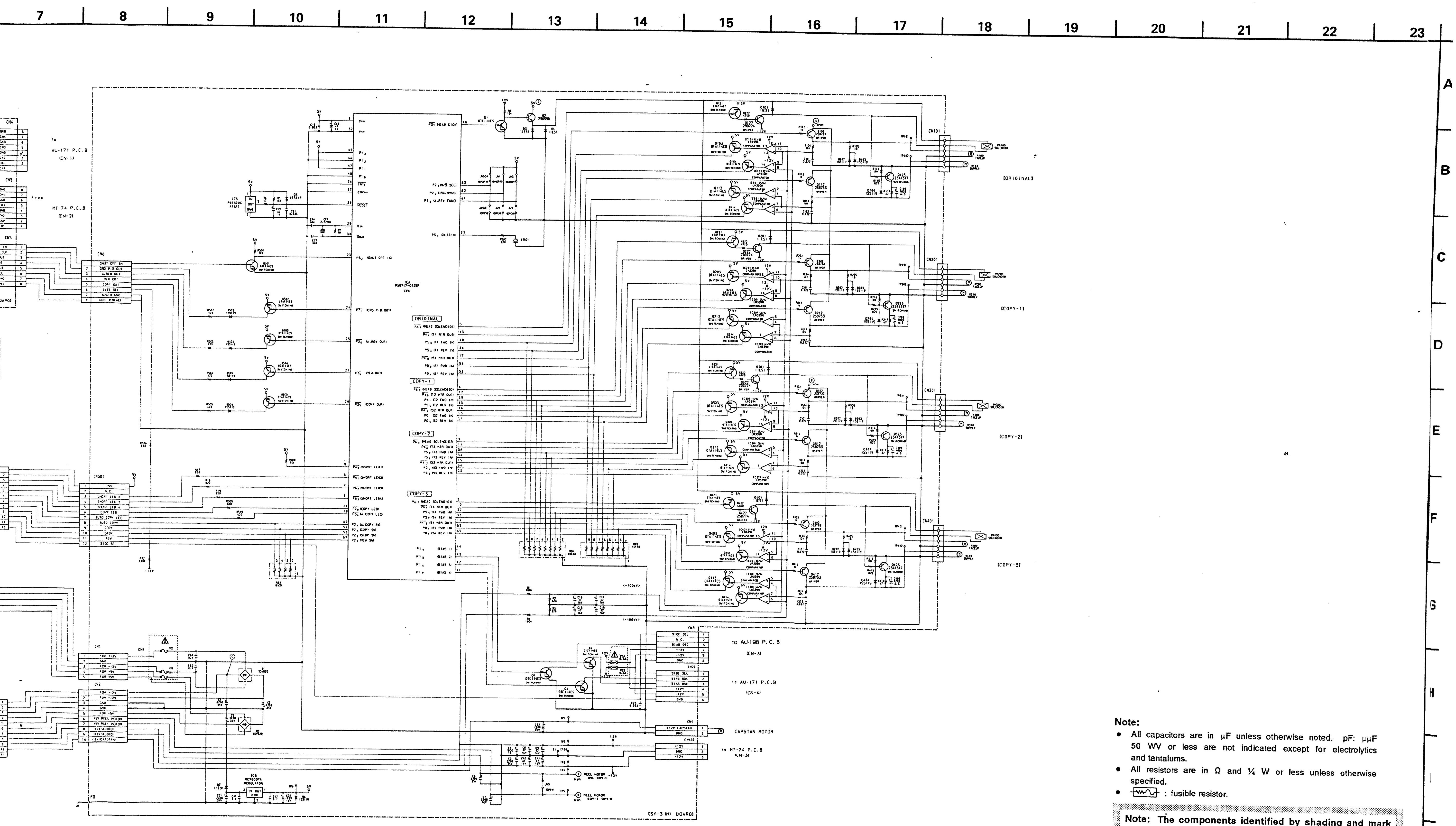
11


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
CN4
CN3
CN5
CN6
To AU-171 P.C.B (CN-1)
From MT-74 P.C.B (CN-2)
LINE CONTROL OUT
[CN-14 (M) BOARD]
[SW-7 (M) BOARD]
[AC-3 BOARD] EK MODEL
POWER SWITCH
BLU
BRN
230V
WHT
L G N
CN1
[AC-3 BOARD] U MODEL
[AC-3 BOARD]
T1
IC1, 2, 5 & 7 REGULATOR
[EX-4 BOARD]
IC5 MS671-K425P CPU
ORIGINAL
COPY-1
COPY-2
COPY-3
CN501
CN1
CN2
CN21
CN22
CN4
CN507
to AU-198 P.C.B (CN-3)
to AU-171 P.C.B (CN-4)
CAPSTAN MOTOR
to MT-74 P.C.B (CN-3)
REEL MOTOR (SUP)
REEL MOTOR (TU)
[SY-3 (M) BOARD]
FG

6-23

6-24

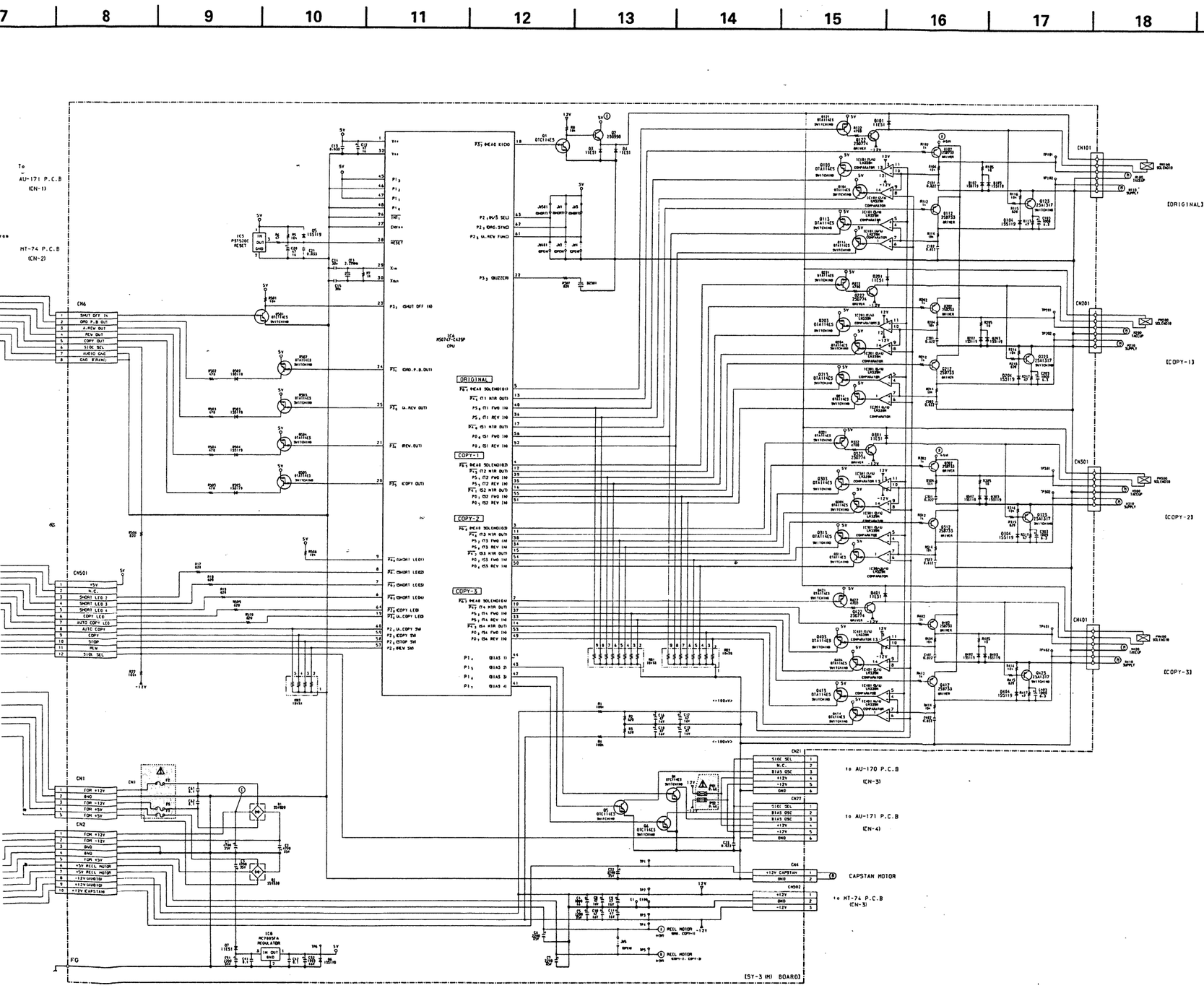

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
CN4
CN3
CN5
CN6
To AU-171 P.C.B (CN-1)
From MT-74 P.C.B (CN-2)
LINE CONTROL OUT
(CN-14 ON) BOARD)
CN1
CN501
(SW-7 ON) BOARD)
POWER SWITCH
AC-3
CN1
CN2
(EX-4 BOARD)
IC5 PST520C RESET
IC6 M50747-642SP CPU
ORIGINAL
COPY-1
COPY-2
COPY-3
CN21
CN22
CN4
CN502
to AU-170 P.C.B (CN-3)
to AU-171 P.C.B (CN-4)
CAPSTAN MOTOR
to MT-74 P.C.B (CN-3)
REEL MOTOR (SUPPLY, COPY-1)
REEL MOTOR (TAKE-UP, COPY-2)
(SY-3 (M) BOARD)
FG



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ⊣WW∿⊢ : fusible resistor.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



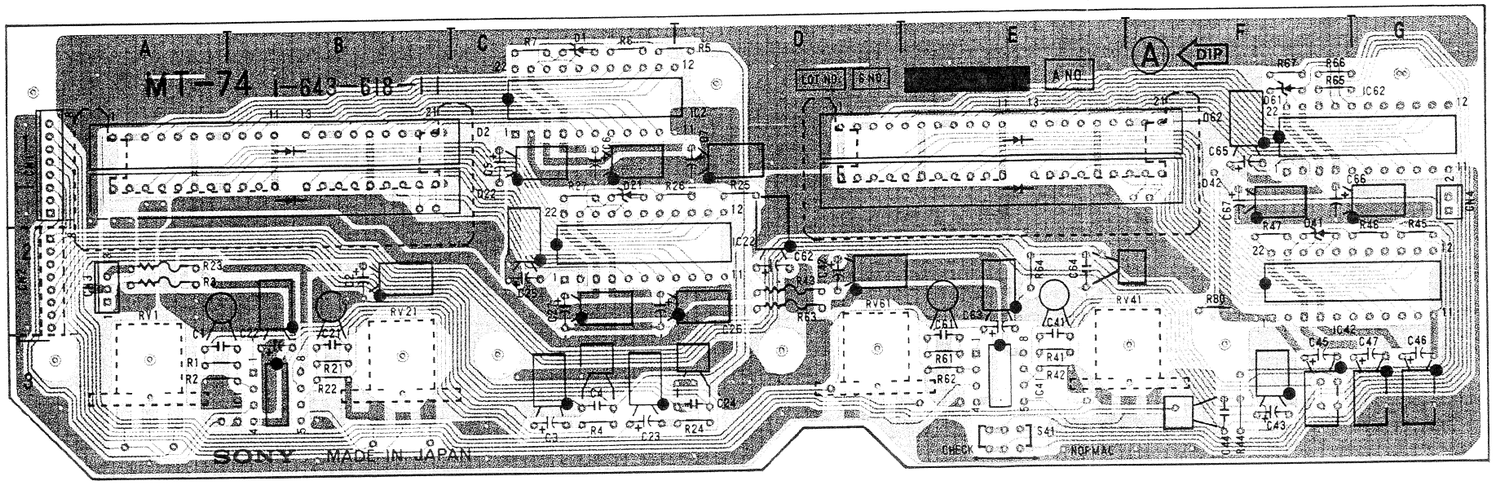
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : fusible resistor.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

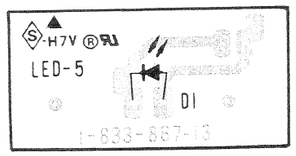
6-9. MT-74, LED-5, VR-148 BOARD – *Soldering Side* –

MT-74 BOARD



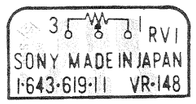
11

LED-5 BOARD

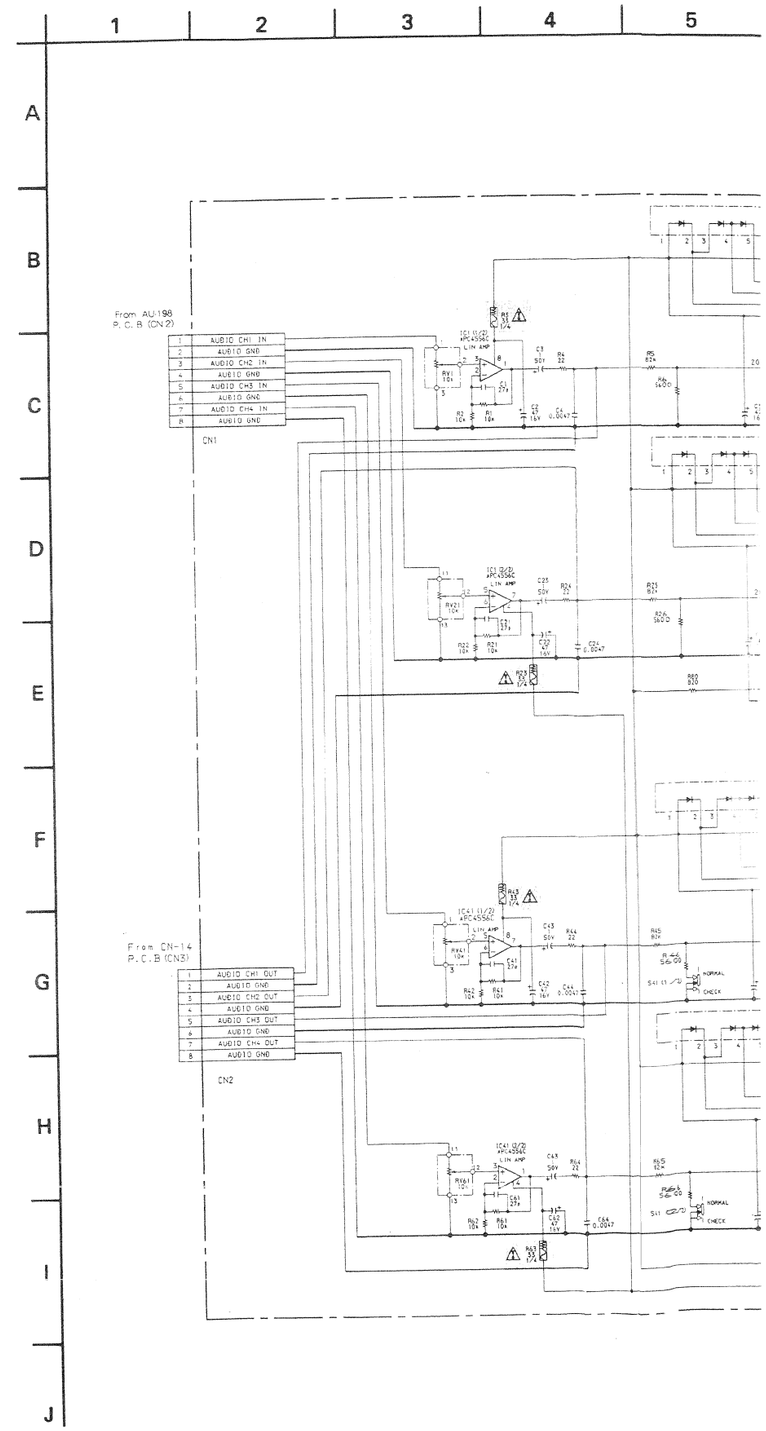


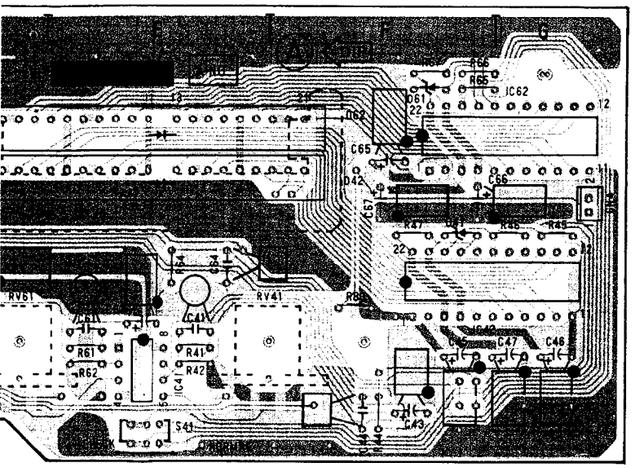
13

VR-148 BOARD



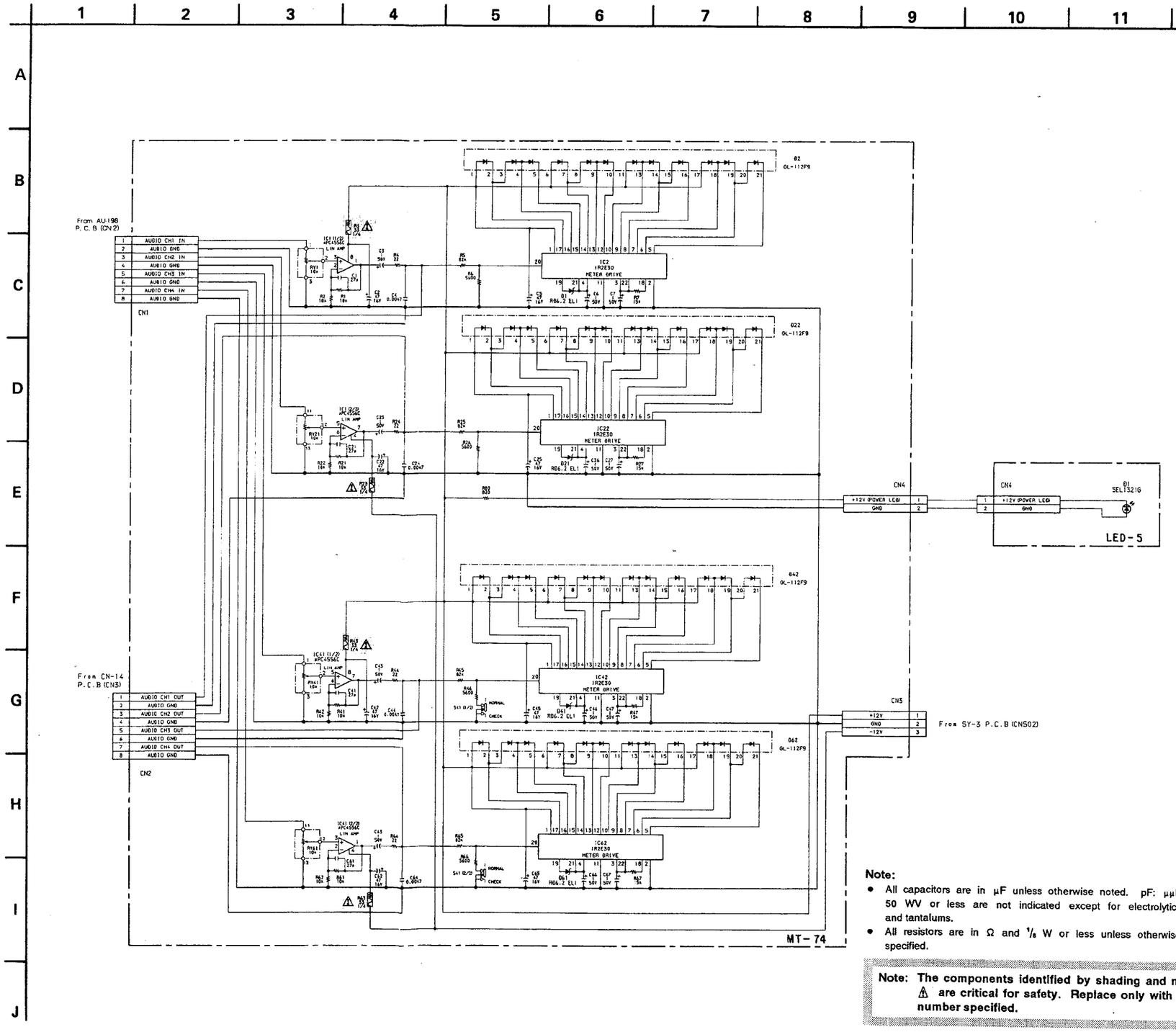
11





11

11



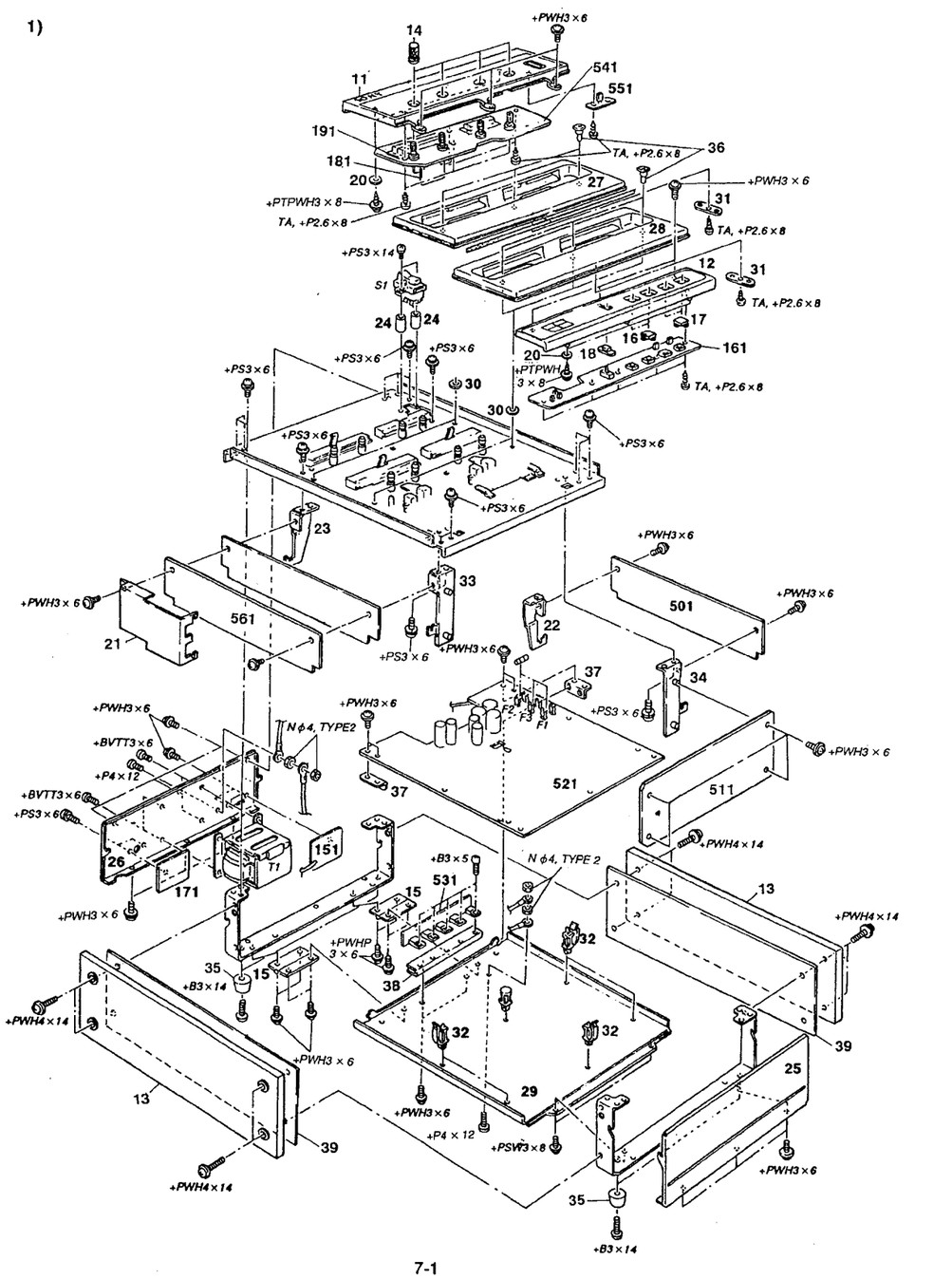
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8 W or less unless otherwise specified.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

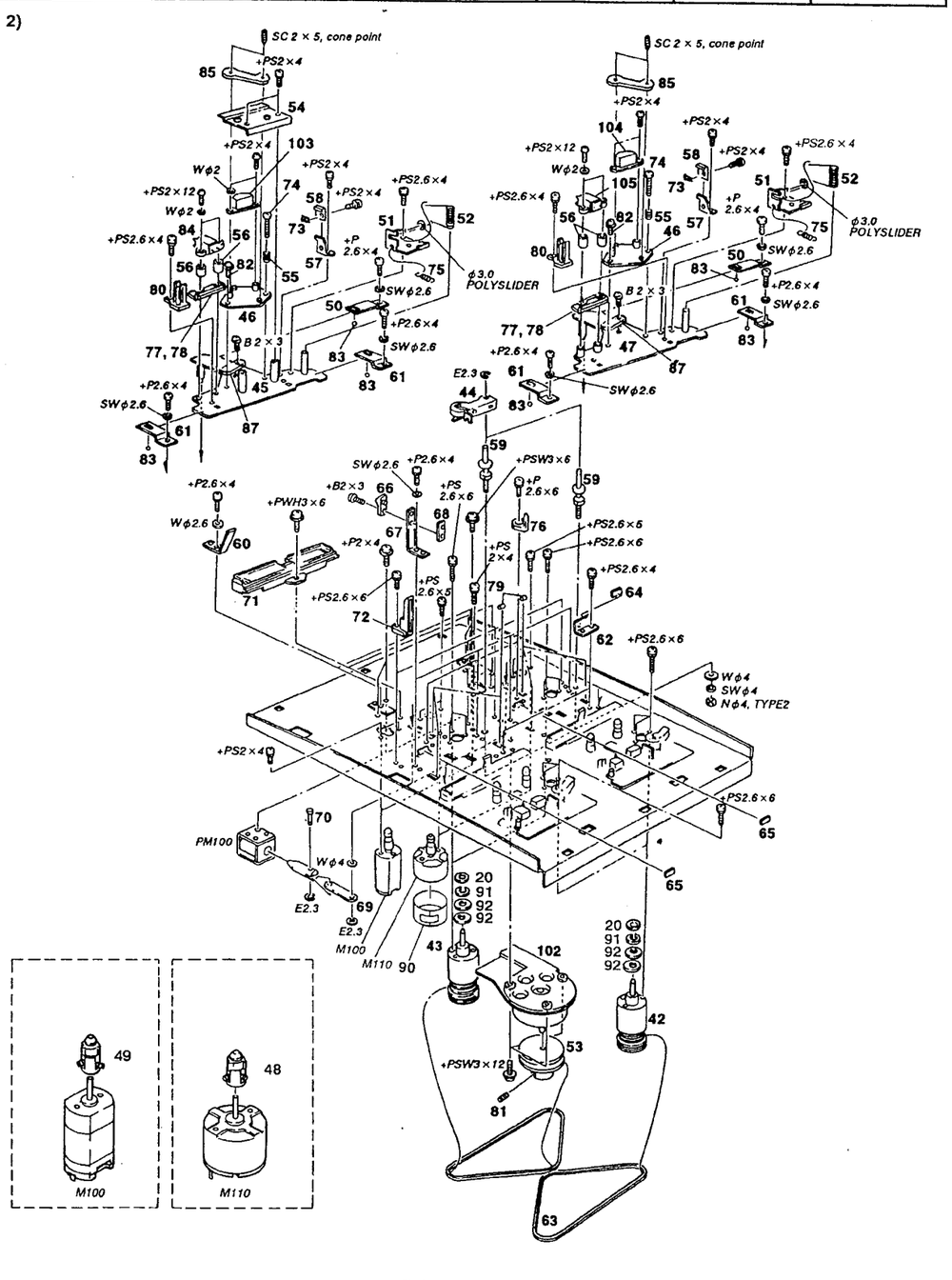
SECTION 7
EXPLODED VIEWS

1)



7-1

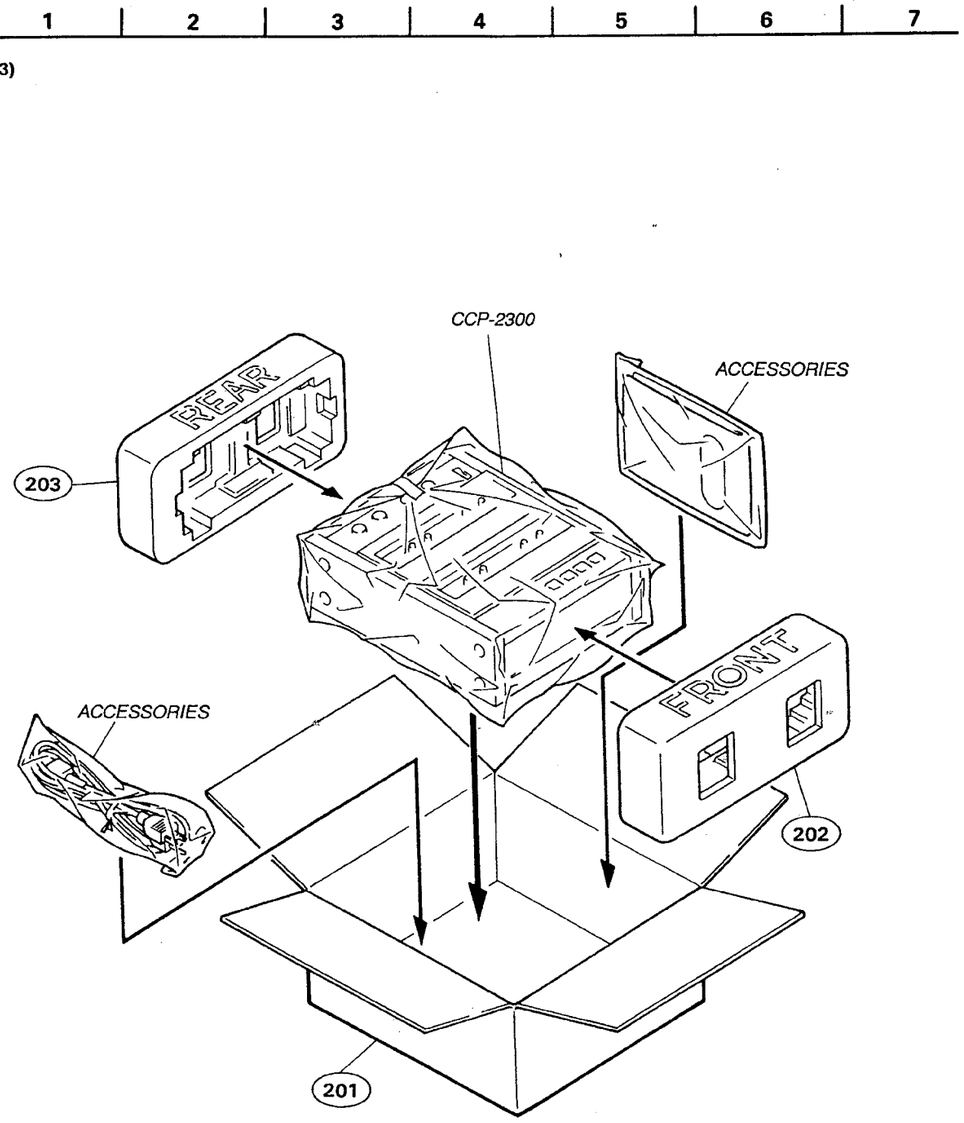
2)



7-2

CCP-2300

3)



1)

Ref. No. or Q'ty	Part No.	SP	Description
11	X-3166-714-1	o	PANEL ASSY, METER
12	X-3166-715-1	o	PANEL ASSY, SWITCH
13	X-3162-347-1	o	PLATE ASSY, SIDE
14	X-3668-075-0	s	KNOB ASSY, CONTROL
15	3-151-905-12	o	HINGE, DOOR
16	3-162-327-01	s	BUTTON
17	3-162-327-21	s	BUTTON
18	3-162-328-01	s	KNOB
20	3-162-415-01	s	WASHER, THRUST
21	3-176-202-01	o	PLATE, SHIELD
22	3-164-239-01	o	BRACKET (RIGHT), PC BOARD
23	3-164-240-01	o	BRACKET (LEFT), PC BOARD
24	3-164-242-01	o	SPACER, SWITCH
25	3-164-261-01	o	PANEL, FRONT
26	3-164-262-02	o	PANEL, REAR
27	3-164-265-01	o	PANEL, CASSETTE
28	3-164-265-11	o	PANEL, CASSETTE
29	3-164-266-01	o	PLATE, BOTTOM
30	3-564-027-01	o	FELT, LIMITER
31	3-668-743-00	o	NUT, PLATE, ROLLER, PRECEDING
32	3-682-047-01	o	HOLDER (A), PC BOARD
33	3-176-199-01	o	BRACKET (LEFT), PC BOARD
34	3-176-200-01	o	BRACKET (RIGHT), PC BOARD
35	X-4809-908-9	s	FOOT, RUBBER
36	3-694-825-11	s	SCREW (M3) (STEP),SPECIAL HEAD
37	3-164-251-01	o	SUPORT,PC BOARD
38	3-164-051-01	o	HEAT SINK
39	3-170-051-01	o	PLATE, SHIELD

2)

Ref. No. or Q'ty	Part No.	SP	Description
42	A-2109-009-A	o	CAPSTAN (B) ASSY
43	A-2109-010-A	o	CAPSTAN (A) ASSY
44	X-3162-306-1	s	PINCH ROLLER ASSY
45	X-3162-342-2	o	CHASSIS (P) ASSY, HEAD
46	X-3162-343-1	o	PLATE ASSY, ADJUSTMENT, HEAD
47	A-2108-136-A	o	CHASSIS (R) ASSY, HEAD
48	X-3162-348-1	o	TABLE (RIGHT) ASSY, REEL
49	X-3162-349-1	o	TABLE (LEFT) ASSY, REEL
50	3-162-312-01	o	SPRING
51	3-162-345-02	o	HOOK, SPRING
52	3-162-399-01	s	SPRING
53	3-164-221-01	s	PULLEY, MOTOR
54	3-164-231-01	o	PLATE, SHIELD, HEAD
55	3-164-232-01	s	SPRING, COMPRESSION
56	3-164-233-01	o	SPACER, ERASE HEAD
57	3-164-234-02	o	BRACKET, BRUSH
58	3-164-235-01	o	RETAINER, BRUSH
59	3-164-236-01	o	SHAFT, PINCH ROLLER
60	3-164-237-01	o	SPRING, CASSETTE RETAINER
61	3-164-238-01	o	RETAINER (B), HEAD CHASSIS
62	3-164-241-01	o	BRACKET, STOPPER
63	3-164-243-01	s	BELT, CAPSTAN
64	3-164-244-01	s	STOPPER, HEAD CHASSIS
65	3-164-245-01	s	CUSHION, CHASSIS
66	3-164-246-01	o	RETAINER, CASSETTE
67	3-164-247-01	s	SPRING, CASSETTE RETAINER
68	3-164-248-01	o	RETAINER, CASSETTE
69	3-164-249-01	o	PLATE, SOLENOID
70	3-164-250-01	o	SHAFT, JOINT
71	3-164-259-01	o	CASSETTE, RETAINER
72	3-164-271-01	s	GUIDE, CASSETTE
73	3-164-272-02	s	BRUSH,ELECTROSTATIC PREVENTION
74	3-418-191-00	s	SCREW
75	3-165-191-01	s	SPRING, TENSION
76	3-491-131-00	s	PIN, CASSETTE GUIDE
77	3-166-369-01	s	SPACER, HEAD
78	3-166-369-11	s	SPACER, HEAD
79	3-558-448-00	s	ROLLER, HEAD CHASSIS
80	3-576-837-00	s	CLAMP, LEAD
81	3-701-509-00	s	SET SCREW, DOUBLE CUP 3X8
82	3-162-424-01	s	SCREW(M2.6X6),(+) SPECIAL HEAD
83	7-671-154-01	o	STEEL, BALL
84	8-825-724-00	s	HEAD, ERASE EF-201-36
85	3-165-188-01	s	SPACER (1), ADJUSTMENT PLATE
87	3-165-189-01	s	SPACER (2), ADJUSTMENT PLATE
90	3-162-496-01	o	CORE, SHIELD
91	3-162-416-01	o	RING (SHAFT), RETAINING C
92	3-701-439-21	s	WASHER

3)

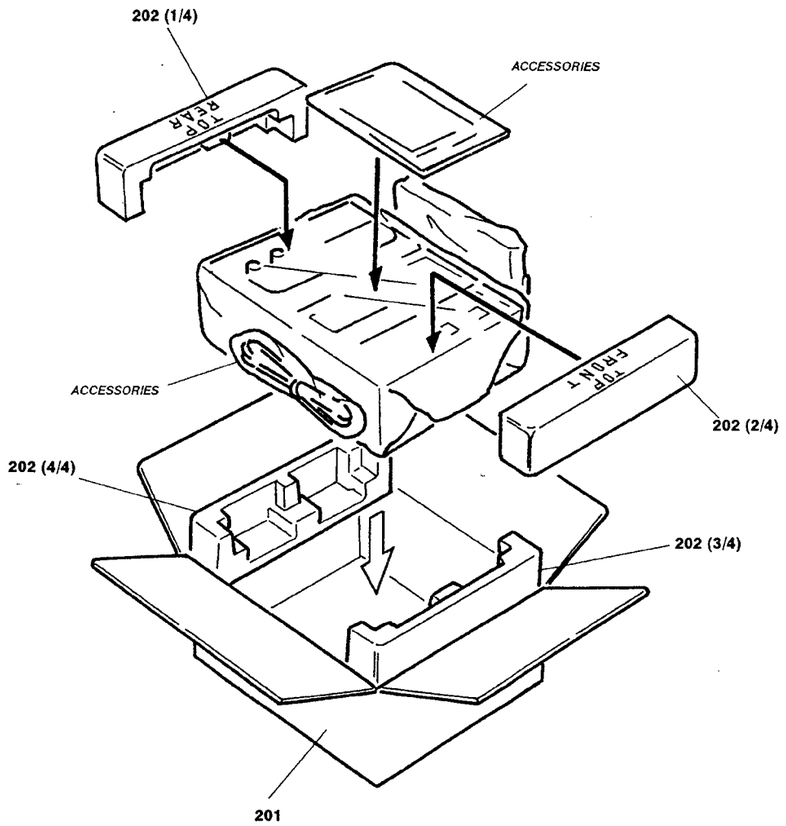
PACKING MATERIALS

Ref. No. or Q'ty	Part No.	SP	Description
201	3-176-137-01	o	INDIVIDUAL CARTON
202	3-164-215-01	o	CUSHION (FRONT)
203	3-164-216-01	o	CUSHION (REAR)

SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
1set	X-3701-105-0	s	ROD ASSY, CLEANING, HEAD
1pc	⚠1-557-377-11	s	CORD, POWER
1pc	3-164-273-01	s	COVER, DUST
1pc	3-755-104-21	s	MANUAL, INSTRUCTION

3)



1)

No.	Part No.	SP	Description
11	X-3166-714-1	o	PANEL ASSY,METER
12	X-3166-715-1	o	PANEL ASSY,SWITCH
13	X-3162-347-1	o	PANEL ASSY,SIDE
14	X-3668-075-0	s	KNOB ASSY,CONTROL
15	3-151-905-12	o	HINGE,DOOR
16	3-162-327-01	s	BUTTON
17	3-162-327-21	s	BUTTON
18	3-162-328-01	s	KNOB
20	3-162-415-01	o	WASHER,THRUST
21	3-183-427-01	o	SHEET,SHIELD
22	3-164-239-01	o	BRACKET(RIGHT),PC BOARD
23	3-164-240-01	o	BRACKET(LEFT),PC BOARD
24	3-164-242-01	o	SPACER,SWITCH
25	3-164-261-01	o	PANEL,FRONT
26	3-164-262-02	o	PANEL,REAR
27	3-164-265-01	o	PANEL,CASSETTE
28	3-164-265-11	o	PANEL,CASSETTE
29	3-164-266-01	o	PLATE,BOTTOM
30	3-564-027-01	o	FELT,LIMITER
31	3-668-743-00	o	NUT,PLATE,ROLLER,PRECEDING
32	3-682-047-01	o	HOLDER(A),PC BOARD
33	3-176-199-01	o	BRACKET(LEFT),PC BOARD
34	3-176-200-01	o	BRACKET(RIGHT),PC BOARD
35	X-4809-908-9	s	FOOT,RUBBER
36	3-694-825-11	s	SCREW(M3)(STEP),SPECIAL HEAD
37	3-164-251-01	o	SUPORT,PC BOARD
38	3-164-051-01	o	HEAT SINK
39	3-170-051-01	o	PLATE,SHIELD
40	3-164-260-01	o	FOOT

2)

No.	Part No.	SP	Description
42	A-2109-009-A	o	CAPSTAN(B) ASSY(COPY2)
	A-2109-010-A	o	CAPSTAN(A) ASSY(COPY3)
43	A-2109-010-A	o	CAPSTAN(A) ASSY(ORIGINAL)
	A-2109-009-A	o	CAPSTAN(B) ASSY(COPY1)
44	X-3162-306-1	s	PINCH ROLLER ASSY
45	X-3162-342-2	o	CHASSIS(P) ASSY,HEAD(ORIGINAL)
46	X-3162-343-1	o	PLATE ASSY,ADJUSTMENT,HEAD
47	X-3162-344-2	o	CHASSI(R) ASSY,HEAD(COPY1-3)
48	X-3162-348-1	o	TABLE(RIGHT) ASSY,REEL
49	X-3162-349-1	o	TABLE(LEFT) ASSY,REEL
50	3-162-312-01	o	SPRING
51	3-162-345-02	o	HOOK,SPRING
52	3-162-399-01	s	SPRING
53	3-164-221-01	s	PULLEY,MOTOR
54	3-164-231-01	o	PLATE,SHIELD,HEAD
55	3-164-232-01	s	SPRING,COMPRESSION
56	3-164-232-01	s	SPACER,ERASE HEAD
57	3-164-234-02	o	BRACKET,BRUSH
58	3-164-235-01	o	RETAINER,BRUSH
59	3-164-236-01	o	SHAFT,PINCH ROLLER
60	3-164-237-01	o	SPRING,CASSETTE RETAINER
61	3-164-238-01	o	RETAINER(B),HEAD CHASSIS
62	3-164-241-01	o	BRACKET,STOPPER
63	3-164-243-01	s	BELT,CAPSTAN
64	3-164-244-01	s	STOPPER,HEAD CHASSIS
65	3-164-245-01	s	CUSHION,CHASSIS
66	3-164-246-01	o	RETAINER,CASSETTE
67	3-164-247-01	s	SPRING,CASSETTE RETAINER
68	3-164-248-01	o	RETAINER,CASSETTE
69	3-164-249-01	o	PLATE,SOLENOID
70	3-164-250-01	o	SHAFT,JOINT
71	3-164-259-01	o	CASSETTE,RETAINER
72	3-164-271-01	s	GUIDE,CASSETTE
73	3-164-272-02	s	BRUSH,ELECTROSTATIC PREVENTION
74	3-418-191-00	s	SCREW
75	3-165-191-01	s	SPRING,TENSION
76	3-491-131-00	s	ROLLER,HEAD CHASSIS
77	3-166-369-01	s	SPACER,HEAD
78	3-166-369-11	s	SPACER,HEAD
79	3-558-448-00	s	ROLLER,HEAD CHASSIS
80	3-576-837-00	s	CLAMP,LEAD
81	3-701-509-00	s	SET SCREW,DOUBLE CUP 3x8
82	7-621-770-67	s	SCREW(M2.6x6),(+)SPECIAL HEAD
83	7-671-112-01	s	STEEL,BALL
84	8-825-724-00	s	HEAD,ERASE EF-201-36
85	3-165-188-01	s	SPACER(1),ADJUSTMENT PLATE
87	3-165-189-02	s	SPACER(2),ADJUSTMENT PLATE
90	3-162-496-01	o	CORE,SHIELD
91	3-162-416-01	s	RING(SHAFT),RETAINING,C
92	3-701-439-21	s	WASHER

3)

PACKING MATERIAL

No.	Part No.	SP	Description
201	3-185-408-01	o	INDIVIDUAL CARTON
202	3-185-016-01	o	CUSHION

SUPPLIED ACCESSORIES

No.	Part No.	SP	Description
1set	X-3701-105-0	s	ROD ASSY,CLEANING,HEAD
1set	1-590-910-11	s	CORD SET,POWER
1pc	3-164-273-01	s	COVER,DUST
1pc	3-755-104-22	s	MANUAL,INSTRUCTION

SECTION 8
ELECTRICAL PARTS LIST

PARTS INFORMATION

(1) The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

(2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to improved parts and/or engineering changes or standardization of genuine parts.
This manual's exploded views and electrical spare parts list indicate the part numbers of the standardized genuine parts at the present.
Regarding engineering part changes by the engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with s in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with o will be processed, but allow for additional delivery time.

(4) Items with no part number and/or no description are not stocked because they are seldom required for routine service.

(5) All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

AU-170 BOARD

Ref. No. or Q'ty	Part No.	SP	Description			
561	A-2008-050-A	o	MOUNTED PWB, AU-170			
C2	1-101-880-00	s	CERAMIC	47PF	5%	50V
C3	1-130-473-00	s	MYLAR	0.0015μF	5%	50V
C4	1-126-163-11	s	ELECT	4.7μF	20%	50V
C5	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C6	1-124-589-11	s	ELECT	47uF	20%	16V
C7	1-124-589-11	s	ELECT	47uF	20%	16V
C8	1-102-961-00	s	CERAMIC	27PF	5%	50V
C9	1-126-301-11	s	ELECT	1uF	20%	50V
C22	1-101-880-00	s	CERAMIC	47PF	5%	50V
C23	1-130-473-00	s	MYLAR	0.0015uF	5%	50V
C24	1-126-163-11	s	ELECT	4.7uF	20%	50V
C25	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C26	1-124-589-11	s	ELECT	47uF	20%	16V
C27	1-124-589-11	s	ELECT	47uF	20%	16V
C28	1-102-961-00	s	CERAMIC	27PF	5%	50V
C29	1-126-301-11	s	ELECT	1uF	20%	50V
C42	1-101-880-00	s	CERAMIC	47PF	5%	50V
C43	1-130-473-00	s	MYLAR	0.0015uF	5%	50V
C44	1-126-163-11	s	ELECT	4.7uF	20%	50V
C45	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C46	1-124-589-11	s	ELECT	47uF	20%	16V
C47	1-124-589-11	s	ELECT	47uF	20%	16V
C48	1-102-961-00	s	CERAMIC	27PF	5%	50V
C49	1-126-301-11	s	ELECT	1uF	20%	50V
C62	1-101-880-00	s	CERAMIC	47PF	5%	50V
C63	1-130-473-00	s	MYLAR	0.0015uF	5%	50V
C64	1-126-163-11	s	ELECT	4.7uF	20%	50V
C65	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C66	1-124-589-11	s	ELECT	47uF	20%	16V
C67	1-124-589-11	s	ELECT	47uF	20%	16V
C68	1-102-961-00	s	CERAMIC	27PF	5%	50V
C69	1-126-301-11	s	ELECT	1uF	20%	50V
C81	1-124-122-11	s	ELECT	100uF	20%	50V
C82	1-124-122-11	s	ELECT	100uF	20%	50V
CN1	1-560-465-00	o	PIN, CONNECTOR 12P			
CN2	1-560-470-00	o	PIN, CONNECTOR 8P			
CN3	1-560-469-00	o	PIN, CONNECTOR 6P			
CN4	1-560-456-00	o	PIN, CONNECTOR 2P			
CN5	1-560-470-00	o	PIN, CONNECTOR 8P			
D41	8-719-911-19	s	DIODE 1SS119			
D71	8-719-911-19	s	DIODE 1SS119			
IC1	8-759-100-06	s	IC UPC4556C			
IC2	8-759-100-06	s	IC UPC4556C			
IC41	8-759-100-06	s	IC UPC4556C			
IC42	8-759-100-06	s	IC UPC4556C			
Q41	8-729-119-78	s	TRANSISTOR 2SC2603-E			
Q61	8-729-119-78	s	TRANSISTOR 2SC2603-E			
R1	1-249-434-11	s	CARBON	27K	5%	1/4W
R2	1-247-881-00	s	CARBON	120K	5%	1/4W
R3	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R4	1-249-412-11	s	CARBON	390	5%	1/4W
R5	1-249-417-11	s	CARBON	1K	5%	1/4W
R6	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R7	1-249-411-11	s	CARBON	330	5%	1/4W
R8	1-249-429-11	s	CARBON	10K	5%	1/4W

(AU-170 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
R21	1-249-434-11	s	CARBON	27K	5%	1/4W
R22	1-247-881-00	s	CARBON	120K	5%	1/4W
R23	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R24	1-249-412-11	s	CARBON	390	5%	1/4W
R25	1-249-417-11	s	CARBON	1K	5%	1/4W
R26	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R27	1-249-411-11	s	CARBON	330	5%	1/4W
R28	1-249-429-11	s	CARBON	10K	5%	1/4W
R41	1-249-434-11	s	CARBON	27K	5%	1/4W
R42	1-247-881-00	s	CARBON	120K	5%	1/4W
R43	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R44	1-249-412-11	s	CARBON	390	5%	1/4W
R45	1-249-417-11	s	CARBON	1K	5%	1/4W
R46	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R47	1-249-411-11	s	CARBON	330	5%	1/4W
R48	1-249-429-11	s	CARBON	10K	5%	1/4W
R49	1-249-429-11	s	CARBON	10K	5%	1/4W
R50	1-249-423-11	s	CARBON	3.3K	5%	1/4W
R51	1-249-441-11	s	CARBON	100K	5%	1/4W
R61	1-249-434-11	s	CARBON	27K	5%	1/4W
R62	1-247-881-00	s	CARBON	120K	5%	1/4W
R63	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R64	1-249-412-11	s	CARBON	390	5%	1/4W
R65	1-249-417-11	s	CARBON	1K	5%	1/4W
R66	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R67	1-249-411-11	s	CARBON	330	5%	1/4W
R68	1-249-429-11	s	CARBON	10K	5%	1/4W
R69	1-249-429-11	s	CARBON	10K	5%	1/4W
R70	1-249-423-11	s	CARBON	3.3K	5%	1/4W
R71	1-249-441-11	s	CARBON	100K	5%	1/4W
RV1	1-230-529-11	s	RES, ADJ, METAL	470K		
RV2	1-230-524-11	s	RES, ADJ, METAL	22K		
RV3	1-230-523-11	s	RES, ADJ, METAL	10K		
RV21	1-230-529-11	s	RES, ADJ, METAL	470K		
RV22	1-230-524-11	s	RES, ADJ, METAL	22K		
RV23	1-230-523-11	s	RES, ADJ, METAL	10K		
RV41	1-230-529-11	s	RES, ADJ, METAL	470K		
RV42	1-230-524-11	s	RES, ADJ, METAL	22K		
RV43	1-230-523-11	s	RES, ADJ, METAL	10K		
RV61	1-230-529-11	s	RES, ADJ, METAL	470K		
RV62	1-230-524-11	s	RES, ADJ, METAL	22K		
RV63	1-230-523-11	s	RES, ADJ, METAL	10K		

AU-171 BOARD

Ref. No. or Q'ty	Part No.
501	A-2006-79
4pcs	1-540-122
C1	1-102-963
C2	1-126-301
C3	1-102-110
C4	1-124-589
C5	1-124-257
C6	1-102-973
C7	1-130-471
C8	1-107-202
C21	1-102-963
C22	1-126-301
C23	1-102-11(
C24	1-124-58
C25	1-124-25
C26	1-102-97
C27	1-130-47
C28	1-107-20
C41	1-102-96
C42	1-126-30
C43	1-102-11
C44	1-124-58
C45	1-124-25
C46	1-102-97
C47	1-130-4
C48	1-107-2(
C49	1-107-1
C61	1-102-9
C62	1-126-3
C63	1-102-1
C64	1-124-5
C65	1-124-2
C66	1-102-9
C67	1-130-4
C68	1-107-2
C69	1-107-1
C81	1-130-4
C82	1-130-4
C83	1-130-0
C84	1-124-1
C85	1-136-2
C86	1-107-2
C87	1-124-5
C88	1-124-5
C89	1-124-1
C90	1-124-1
CN1	1-560-4
CN2	1-560-4
CN3	1-560-4
CN4	1-560-4
CN5	1-560-4
CN6	1-560-4
CN7	1-560-4
CT1	1-141-
CT21	1-141-
CT41	1-141-
CT61	1-141-

AU-171 BOARD

Ref. No. or Q'ty	Part No.	SP	Description			
501	A-2006-794-A	o	MOUNTED PWB, AU-171			
4pcs	1-540-122-11	o	SOCKET, SIL 2P			
C1	1-102-963-00	s	CERAMIC	33PF	5%	50V
C2	1-126-301-11	s	ELECT	1uF	20%	50V
C3	1-102-110-00	s	CERAMIC	220PF	10%	50V
C4	1-124-589-11	s	ELECT	47uF	20%	16V
C5	1-124-257-00	s	ELECT	2.2uF	20%	50V
C6	1-102-973-00	s	CERAMIC	100PF	5%	50V
C7	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C8	1-107-202-00	s	MICA	10PF	5%	500V
C21	1-102-963-00	s	CERAMIC	33PF	5%	50V
C22	1-126-301-11	s	ELECT	1uF	20%	50V
C23	1-102-110-00	s	CERAMIC	220PF	10%	50V
C24	1-124-589-11	s	ELECT	47uF	20%	16V
C25	1-124-257-00	s	ELECT	2.2uF	20%	50V
C26	1-102-973-00	s	CERAMIC	100PF	5%	50V
C27	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C28	1-107-202-00	s	MICA	10PF	5%	500V
C41	1-102-963-00	s	CERAMIC	33PF	5%	50V
C42	1-126-301-11	s	ELECT	1uF	20%	50V
C43	1-102-110-00	s	CERAMIC	220PF	10%	50V
C44	1-124-589-11	s	ELECT	47uF	20%	16V
C45	1-124-257-00	s	ELECT	2.2uF	20%	50V
C46	1-102-973-00	s	CERAMIC	100PF	5%	50V
C47	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C48	1-107-202-00	s	MICA	10PF	5%	500V
C49	1-107-169-00	s	MICA	100PF	5%	500V
C61	1-102-963-00	s	CERAMIC	33PF	5%	50V
C62	1-126-301-11	s	ELECT	1uF	20%	50V
C63	1-102-110-00	s	CERAMIC	220PF	10%	50V
C64	1-124-589-11	s	ELECT	47uF	20%	16V
C65	1-124-257-00	s	ELECT	2.2uF	20%	50V
C66	1-102-973-00	s	CERAMIC	100PF	5%	50V
C67	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C68	1-107-202-00	s	MICA	10PF	5%	500V
C69	1-107-169-00	s	MICA	100PF	5%	500V
C81	1-130-483-00	s	MYLAR	0.01uF	5%	50V
C82	1-130-483-00	s	MYLAR	0.01uF	5%	50V
C83	1-130-012-00	s	FILM	330PF	5%	50V
C84	1-124-122-11	s	ELECT	100uF	20%	50V
C85	1-136-271-00	s	FILM	56PF	5%	630V
C86	1-107-202-00	s	MICA	10PF	5%	500V
C87	1-124-589-11	s	ELECT	47uF	20%	16V
C88	1-124-589-11	s	ELECT	47uF	20%	16V
C89	1-124-122-11	s	ELECT	100uF	20%	50V
C90	1-124-122-11	s	ELECT	100uF	20%	50V
CN1	1-560-470-00	o	PIN, CONNECTOR 8P			
CN2	1-560-470-00	o	PIN, CONNECTOR 8P			
CN3	1-560-472-00	o	PIN, CONNECTOR 12P			
CN4	1-560-469-00	o	PIN, CONNECTOR 6P			
CN5	1-560-469-00	o	PIN, CONNECTOR 6P			
CN6	1-560-469-00	o	PIN, CONNECTOR 6P			
CN7	1-560-456-00	o	PIN, CONNECTOR 2P			
CT1	1-141-297-11	s	CAP, TRIMMER 90PF			
CT21	1-141-297-11	s	CAP, TRIMMER 90PF			
CT41	1-141-297-11	s	CAP, TRIMMER 90PF			
CT61	1-141-297-11	s	CAP, TRIMMER 90PF			

(AU-171 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
D81	8-719-200-02	s	DIODE 10E2			
FL1	1-409-407-11	s	COIL, BIAS TRAP			
FL21	1-409-407-11	s	COIL, BIAS TRAP			
FL41	1-409-407-11	s	COIL, BIAS TRAP			
FL61	1-409-407-11	s	COIL, BIAS TRAP			
IC1	8-759-900-72	s	IC NE5532P			
IC41	8-759-900-72	s	IC NE5532P			
L81	1-410-311-11	s	COIL (SHIELD TYPE)			
LV1	1-410-310-11	s	COIL, VARIABLE			
LV21	1-410-310-11	s	COIL, VARIABLE			
LV41	1-410-310-11	s	COIL, VARIABLE			
LV61	1-410-310-11	s	COIL, VARIABLE			
LV82	1-424-371-11	s	COIL			
Q81	8-729-140-96	s	TRANSISTOR 2SD774-4			
Q82	8-729-140-93	s	TRANSISTOR 2SB733-3			
Q83	8-729-199-82	s	TRANSISTOR 2SD998			
R1	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R2	1-249-417-11	s	CARBON	1K	5%	1/4W
R3	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R4	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R5	1-249-429-11	s	CARBON	10K	5%	1/4W
R6	1-249-409-11	s	CARBON	220	5%	1/4W
R7	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R8	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R10	1-249-393-11	s	CARBON	10	5%	1/4W
R21	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R22	1-249-417-11	s	CARBON	1K	5%	1/4W
R23	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R24	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R25	1-249-429-11	s	CARBON	10K	5%	1/4W
R26	1-249-409-11	s	CARBON	220	5%	1/4W
R27	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R28	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R30	1-249-393-11	s	CARBON	10	5%	1/4W
R41	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R42	1-249-417-11	s	CARBON	1K	5%	1/4W
R43	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R44	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R45	1-249-429-11	s	CARBON	10K	5%	1/4W
R46	1-249-409-11	s	CARBON	220	5%	1/4W
R47	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R48	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R50	1-249-393-11	s	CARBON	10	5%	1/4W
R61	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R62	1-249-417-11	s	CARBON	1K	5%	1/4W
R63	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R64	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R65	1-249-429-11	s	CARBON	10K	5%	1/4W
R66	1-249-409-11	s	CARBON	220	5%	1/4W
R67	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R68	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R70	1-249-393-11	s	CARBON	10	5%	1/4W
R81	1-249-430-11	s	CARBON	12k	5%	1/4W
R82	1-249-399-11	s	CARBON	33	5%	1/4W
R83	1-249-385-11	s	CARBON	2.2	5%	1/4W
R84	1-249-385-11	s	CARBON	2.2	5%	1/4W

(AU-171 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
R85	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R86	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R87	⚠1-217-638-21	s	FUSIBLE	1.5	5%	1/4W
R88	1-249-429-11	s	CARBON	10K	5%	1/4W
R89	1-249-441-11	s	CARBON	100K	5%	1/4W
R90	1-249-393-11	s	CARBON	10	5%	1/4W
R91	1-249-439-11	s	CARBON	68K	5%	1/4W
R92	1-249-393-11	s	CARBON	10	5%	1/4W
RV1	1-230-523-11	s	RES, ADJ, METAL 10K			
RV21	1-230-523-11	s	RES, ADJ, METAL 10K			
RV41	1-230-523-11	s	RES, ADJ, METAL 10K			
RV61	1-230-523-11	s	RES, ADJ, METAL 10K			
RY81	1-515-683-11	s	RELAY			
RY82	1-515-683-11	s	RELAY			
T81	1-433-397-12	s	TRANSFORMER, BIAS OSCILLATION			

AU-172 BOARD

Ref. No. or Q'ty	Part No.	SP	Description			
511	A-2006-795-A	o	MOUNTED PWB, AU-172			
8pcs	1-540-122-11	o	SOCKET, SIL 2P			
C1	1-102-963-00	s	CERAMIC	33PF	5%	50V
C2	1-126-301-11	s	ELECT	1uF	20%	50V
C3	1-102-110-00	s	CERAMIC	220PF	10%	50V
C4	1-124-589-11	s	ELECT	47uF	20%	16V
C5	1-124-257-00	s	ELECT	2.2uF	20%	50V
C6	1-102-973-00	s	CERAMIC	100PF	5%	50V
C7	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C8	1-107-202-00	s	MICA	10PF	5%	500V
C21	1-102-963-00	s	CERAMIC	33PF	5%	50V
C22	1-126-301-11	s	ELECT	1uF	20%	50V
C23	1-102-110-00	s	CERAMIC	220PF	10%	50V
C24	1-124-589-11	s	ELECT	47uF	20%	16V
C25	1-124-257-00	s	ELECT	2.2uF	20%	50V
C26	1-102-973-00	s	CERAMIC	100PF	5%	50V
C27	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C28	1-107-202-00	s	MICA	10PF	5%	500V
C41	1-102-963-00	s	CERAMIC	33PF	5%	50V
C42	1-126-301-11	s	ELECT	1uF	20%	50V
C43	1-102-110-00	s	CERAMIC	220PF	10%	50V
C44	1-124-589-11	s	ELECT	47uF	20%	16V
C45	1-124-257-00	s	ELECT	2.2uF	20%	50V
C46	1-102-973-00	s	CERAMIC	100PF	5%	50V
C47	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C48	1-107-202-00	s	MICA	10PF	5%	500V
C49	1-107-169-00	s	MICA	100PF	5%	500V
C61	1-102-963-00	s	CERAMIC	33PF	5%	50V
C62	1-126-301-11	s	ELECT	1uF	20%	50V
C63	1-102-110-00	s	CERAMIC	220PF	10%	50V
C64	1-124-589-11	s	ELECT	47uF	20%	16V
C65	1-124-257-00	s	ELECT	2.2uF	20%	50V
C66	1-102-973-00	s	CERAMIC	100PF	5%	50V
C67	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C68	1-107-202-00	s	MICA	10PF	5%	500V
C69	1-107-169-00	s	MICA	100PF	5%	500V
C81	1-130-483-00	s	MYLAR	0.01uF	5%	50V
C82	1-130-483-00	s	MYLAR	0.01uF	5%	50V
C83	1-130-012-00	s	FILM	330PF	5%	50V
C84	1-124-122-11	s	ELECT	100uF	20%	50V
C85	1-136-271-00	s	FILM	56PF	5%	630V
C86	1-107-202-00	s	MICA	10PF	5%	500V
C87	1-124-589-11	s	ELECT	47uF	20%	16V
C88	1-124-122-11	s	ELECT	100uF	20%	50V
C89	1-124-122-11	s	ELECT	100uF	20%	50V
C101	1-102-963-00	s	CERAMIC	33PF	5%	50V
C102	1-126-301-11	s	ELECT	1uF	20%	50V
C103	1-102-110-00	s	CERAMIC	220PF	10%	50V
C104	1-124-589-11	s	ELECT	47uF	20%	16V
C105	1-124-257-00	s	ELECT	2.2uF	20%	50V
C106	1-102-973-00	s	CERAMIC	100PF	5%	50V
C107	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C108	1-107-202-00	s	MICA	10PF	5%	500V
C121	1-102-963-00	s	CERAMIC	33PF	5%	50V
C122	1-126-301-11	s	ELECT	1uF	20%	50V
C123	1-102-110-00	s	CERAMIC	220PF	10%	50V
C124	1-124-589-11	s	ELECT	47uF	20%	16V
C125	1-124-257-00	s	ELECT	2.2uF	20%	50V

U-170
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(AU-198 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description		
R23	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R24	1-249-412-11	s	CARBON	390	5% 1/4W
R25	1-249-417-11	s	CARBON	1K	5% 1/4W
R26	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R27	1-249-411-11	s	CARBON	330	5% 1/4W
R28	1-259-429-11	S	CARBON	10K	5% 1/4W
R41	1-249-434-11	s	CARBON	27K	5% 1/4W
R42	1-247-883-00	s	CARBON	150K	5% 1/4W
R43	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R44	1-249-412-11	s	CARBON	390	5% 1/4W
R45	1-249-417-11	s	CARBON	1K	5% 1/4W
R46	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R47	1-249-411-11	s	CARBON	330	5% 1/4W
R48	1-259-429-11	S	CARBON	10K	5% 1/4W
R49	1-259-429-11	S	CARBON	10K	5% 1/4W
R50	1-249-423-11	s	CARBON	3.3K	5% 1/4W
R51	1-249-441-11	S	CARBON	100K	5% 1/4W
R61	1-249-434-11	s	CARBON	27K	5% 1/4W
R62	1-247-883-00	s	CARBON	150K	5% 1/4W
R63	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R64	1-249-412-11	s	CARBON	390	5% 1/4W
R65	1-249-417-11	s	CARBON	1K	5% 1/4W
R66	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R67	1-249-411-11	s	CARBON	330	5% 1/4W
R68	1-259-429-11	s	CARBON	10K	5% 1/4W
R69	1-259-429-11	S	CARBON	10K	5% 1/4W
R70	1-249-423-11	s	CARBON	3.3K	5% 1/4W
R71	1-249-441-11	s	CARBON	100K	5% 1/4W
RV1	1-230-529-11	s	RES,ADJ,METAL		470K
RV2	1-230-523-11	s	RES,ADJ,METAL		10K
RV3	1-230-523-11	s	RES,ADJ,METAL		10K
RV21	1-230-529-11	s	RES,ADJ,METAL		470K
RV22	1-230-523-11	s	RES,ADJ,METAL		10K
RV23	1-230-523-11	s	RES,ADJ,METAL		10K
RV41	1-230-529-11	s	RES,ADJ,METAL		470K
RV42	1-230-523-11	s	RES,ADJ,METAL		10K
RV43	1-230-523-11	s	RES,ADJ,METAL		10K
RV61	1-230-529-11	s	RES,ADJ,METAL		470K
RV62	1-230-523-11	s	RES,ADJ,METAL		10K
RV63	1-230-523-11	s	RES,ADJ,METAL		10K

AU-171 BOARD

Ref. No. or Q'ty	Part No.	SP	Description		
501	A-2006-794-A	o	MOUNTED CIRCUIT BOARD,AU-171		
4pcs	1-540-122-11	o	SOCKET,SIL 2P		
C1	1-102-963-00	s	CERAMIC	33pF	5% 50V
C2	1-126-301-11	s	ELECT	1uF	20% 50V
C3	1-102-110-00	s	CERAMIC	220pF	10% 50V
C4	1-124-589-11	s	ELECT	47uF	20% 16V
C5	1-124-257-00	s	ELECT	2.2uF	20% 50V
C6	1-102-973-00	s	CERAMIC	100pF	5% 50V
C7	1-130-471-00	s	MYLAR	0.001uF	5% 50V
C8	1-107-597-11	s	CERAMIC	22pF	5% 500V
C21	1-102-963-00	s	CERAMIC	33pF	5% 50V
C22	1-126-301-11	s	ELECT	1uF	20% 50V
C23	1-102-110-00	s	CERAMIC	220pF	10% 50V
C24	1-124-589-11	s	ELECT	47uF	20% 16V
C25	1-124-257-00	s	ELECT	2.2uF	20% 50V
C26	1-102-973-00	s	CERAMIC	100pF	5% 50V
C27	1-130-471-00	s	MYLAR	0.001uF	5% 50V
C28	1-107-597-11	s	CERAMIC	22pF	5% 500V
C41	1-102-963-00	s	CERAMIC	33pF	5% 50V
C42	1-126-301-11	s	ELECT	1uF	20% 50V
C43	1-102-110-00	s	CERAMIC	220pF	10% 50V
C44	1-124-589-11	s	ELECT	47uF	20% 16V
C45	1-124-257-00	s	ELECT	2.2uF	20% 50V
C46	1-102-973-00	s	CERAMIC	100pF	5% 50V
C47	1-130-471-00	s	MYLAR	0.001uF	5% 50V
C48	1-107-597-11	s	CERAMIC	22pF	5% 500V
C49	1-107-612-11	s	CERAMIC	100pF	5% 500V
C61	1-102-963-00	s	CERAMIC	33pF	5% 50V
C62	1-126-301-11	s	ELECT	1uF	20% 50V
C63	1-102-110-00	s	CERAMIC	220pF	10% 50V
C64	1-124-589-11	s	ELECT	47uF	20% 16V
C65	1-124-257-00	s	ELECT	2.2uF	20% 50V
C66	1-102-973-00	s	CERAMIC	100pF	5% 50V
C67	1-130-471-00	s	MYLAR	0.001uF	5% 50V
C68	1-107-597-11	s	CERAMIC	22pF	5% 500V
C69	1-107-612-11	s	CERAMIC	100pF	5% 500V
C81	1-130-477-00	s	MYLAR	0.0033uF	5% 50V
C82	1-130-469-00	s	MYLAR	680pF	5% 50V
C83	1-130-012-00	s	FILM	330pF	5% 50V
C84	1-104-665-11	s	ELECT	100uF	20% 25V
C85	1-136-270-11	s	FILM	47pF	5% 630V
C86	1-107-504-11	s	CERAMIC	10pF	0.5pF 500V
C87	1-124-589-11	s	ELECT	47uF	20% 16V
C88	1-124-589-11	s	ELECT	47uF	20% 16V
C89	1-104-665-11	s	ELECT	100uF	20% 25V
C90	1-104-665-11	s	ELECT	100uF	20% 25V
CN1	1-560-470-00	o	PIN,CONNECTOR		8P
CN2	1-560-470-00	o	PIN,CONNECTOR		8P
CN3	1-560-472-00	o	PIN,CONNECTOR		12P
CN4	1-560-469-00	o	PIN,CONNECTOR		6P
CN5	1-560-469-00	o	PIN,CONNECTOR		6P
CN6	1-560-469-00	o	PIN,CONNECTOR		6P
CN7	1-560-456-00	o	PIN,CONNECTOR		2P
CT1	1-141-297-11	s	CAP,TRIMMER		90pF
CT21	1-141-297-11	s	CAP,TRIMMER		90pF
CT41	1-141-297-11	s	CAP,TRIMMER		90pF
CT61	1-141-297-11	s	CAP,TRIMMER		90pF

(AU-171 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description		
D81	8-719-200-02	s	DIODE 10E2		
FL1	1-409-407-11	s	COIL,BIAS TRAP		
FL21	1-409-407-11	s	COIL,BIAS TRAP		
FL41	1-409-407-11	s	COIL,BIAS TRAP		
FL61	1-409-407-11	s	COIL,BIAS TRAP		
IC1	8-759-900-72	s	IC NE5532P		
IC41	8-759-900-72	s	IC NE5532P		
L81	1-410-311-11	s	COIL(SHIELD TYPE)		
LV1	1-410-310-11	s	COIL,VARIABLE		
LV21	1-410-310-11	s	COIL,VARIABLE		
LV41	1-410-310-11	s	COIL,VARIABLE		
LV61	1-410-310-11	s	COIL,VARIABLE		
LV82	1-424-371-11	s	COIL		
Q81	8-729-140-96	s	TRANSISTOR	2SD774-34	
Q82	8-729-140-93	s	TRANSISTOR	2SB733-34	
Q83	8-729-199-82	s	TRANSISTOR	2SD998-L	
R1	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R2	1-249-417-11	s	CARBON	1K	5% 1/4W
R3	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R4	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R5	1-249-429-11	s	CARBON	10K	5% 1/4W
R6	1-249-409-11	s	CARBON	220	5% 1/4W
R7	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R8	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R10	1-249-393-11	s	CARBON	10	5% 1/4W
R21	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R22	1-249-417-11	s	CARBON	1K	5% 1/4W
R23	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R24	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R25	1-249-429-11	s	CARBON	10K	5% 1/4W
R26	1-249-409-11	s	CARBON	220	5% 1/4W
R27	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R28	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R30	1-249-393-11	s	CARBON	10	5% 1/4W
R41	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R42	1-249-417-11	s	CARBON	1K	5% 1/4W
R43	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R44	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R45	1-249-429-11	s	CARBON	10K	5% 1/4W
R46	1-249-409-11	s	CARBON	220	5% 1/4W
R47	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R48	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R50	1-249-393-11	s	CARBON	10	5% 1/4W
R61	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R62	1-249-417-11	s	CARBON	1K	5% 1/4W
R63	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R64	1-212-869-00	s	FUSIBLE	33	5% 1/4W
R65	1-249-429-11	s	CARBON	10K	5% 1/4W
R66	1-249-409-11	s	CARBON	220	5% 1/4W
R67	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R68	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R70	1-249-393-11	s	CARBON	10	5% 1/4W
R81	1-249-430-11	s	CARBON	12K	5% 1/4W
R82	1-249-399-11	s	CARBON	33	5% 1/4W
R83	1-249-385-11	s	CARBON	2.2	5% 1/4W
R84	1-249-385-11	s	CARBON	2.2	5% 1/4W

(AU-171 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description		
R85	1-249-425-11	s	CARBON	4.7K	5% 1/4W
R86	1-249-421-11	s	CARBON	2.2K	5% 1/4W
R87	1-217-638-21	s	FUSIBLE	1.5	5% 1/4W
R88	1-249-429-11	s	CARBON	10K	5% 1/4W
R89	1-249-441-11	s	CARBON	100K	5% 1/4W
R90	1-249-393-11	s	CARBON	10	5% 1/4W
R91	1-249-439-11	s	CARBON	68K	5% 1/4W
R92	1-249-393-11	s	CARBON	10	5% 1/4W
RV1	1-230-523-11	s	RES,ADJ,METAL		10K
RV21	1-230-523-11	s	RES,ADJ,METAL		10K
RV41	1-230-523-11	s	RES,ADJ,METAL		10K
RV61	1-230-523-11	s	RES,ADJ,METAL		10K
RY81	1-515-683-11	s	RELAY		
RY82	1-515-683-11	s	RELAY		
T81	1-433-397-13	s	TRANSFORMER,BIAS OSCILLATION		

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
C126	1-102-973-00	s	CERAMIC	100PF	5%	50V
C127	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C128	1-107-202-00	s	MICA	10PF	5%	500V
C141	1-102-963-00	s	CERAMIC	33PF	5%	50V
C142	1-126-301-11	s	ELECT	1uF	20%	50V
C143	1-102-110-00	s	CERAMIC	220PF	10%	50V
C144	1-124-589-11	s	ELECT	47uF	20%	16V
C145	1-124-257-00	s	ELECT	2.2uF	20%	50V
C146	1-102-973-00	s	CERAMIC	100PF	5%	50V
C147	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C148	1-107-202-00	s	MICA	10PF	5%	500V
C149	1-107-169-00	s	MICA	100PF	5%	500V
C161	1-102-963-00	s	CERAMIC	33PF	5%	50V
C162	1-126-301-11	s	ELECT	1uF	20%	50V
C163	1-102-110-00	s	CERAMIC	220PF	10%	50V
C164	1-124-589-11	s	ELECT	47uF	20%	16V
C165	1-124-257-00	s	ELECT	2.2uF	20%	50V
C166	1-102-973-00	s	CERAMIC	100PF	5%	50V
C167	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C168	1-107-202-00	s	MICA	10PF	5%	500V
C169	1-107-169-00	s	MICA	100PF	5%	500V
C181	1-130-483-00	s	MYLAR	0.01uF	5%	50V
C182	1-130-483-00	s	MYLAR	0.01uF	5%	50V
C183	1-130-012-00	s	FILM	330PF	5%	50V
C184	1-124-122-11	s	ELECT	100uF	20%	50V
C185	1-136-271-00	s	FILM	56PF	5%	630V
C186	1-107-202-00	s	MICA	10PF	5%	500V
CN1	1-560-470-00	o	PIN, CONNECTOR 8P			
CN2	1-560-472-00	o	PIN, CONNECTOR 12P			
CN3	1-560-472-00	o	PIN, CONNECTOR 12P			
CN4	1-560-469-00	o	PIN, CONNECTOR 6P			
CN5	1-560-456-00	o	PIN, CONNECTOR 2P			
CT1	1-141-297-11	s	CAP, TRIMMER 90PF			
CT21	1-141-297-11	s	CAP, TRIMMER 90PF			
CT41	1-141-297-11	s	CAP, TRIMMER 90PF			
CT61	1-141-297-11	s	CAP, TRIMMER 90PF			
CT101	1-141-297-11	s	CAP, TRIMMER 90PF			
CT121	1-141-297-11	s	CAP, TRIMMER 90PF			
CT141	1-141-297-11	s	CAP, TRIMMER 90PF			
CT161	1-141-297-11	s	CAP, TRIMMER 90PF			
D81	8-719-200-02	s	DIODE 10E2			
D181	8-719-200-02	s	DIODE 10E2			
FL1	1-409-407-11	s	COIL, BIAS TRAP			
FL21	1-409-407-11	s	COIL, BIAS TRAP			
FL41	1-409-407-11	s	COIL, BIAS TRAP			
FL61	1-409-407-11	s	COIL, BIAS TRAP			
FL101	1-409-407-11	s	COIL, BIAS TRAP			
FL121	1-409-407-11	s	COIL, BIAS TRAP			
FL141	1-409-407-11	s	COIL, BIAS TRAP			
FL161	1-409-407-11	s	COIL, BIAS TRAP			
IC1	8-759-900-72	s	IC NE5532P			
IC41	8-759-900-72	s	IC NE5532P			
IC101	8-759-900-72	s	IC NE5532P			
IC141	8-759-900-72	s	IC NE5532P			
L81	1-410-311-11	s	COIL (SHIELD TYPE)			
L181	1-410-311-11	s	COIL (SHIELD TYPE)			

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
LV1	1-410-310-11	s	COIL, VARIABLE			
LV21	1-410-310-11	s	COIL, VARIABLE			
LV41	1-410-310-11	s	COIL, VARIABLE			
LV61	1-410-310-11	s	COIL, VARIABLE			
LV81	1-424-371-11	s	COIL			
LV101	1-410-310-11	s	COIL, VARIABLE			
LV121	1-410-310-11	s	COIL, VARIABLE			
LV141	1-410-310-11	s	COIL, VARIABLE			
LV161	1-410-310-11	s	COIL, VARIABLE			
LV181	1-424-371-11	s	COIL			
Q81	8-729-140-96	s	TRANSISTOR 2SD774-4			
Q82	8-729-140-93	s	TRANSISTOR 2SB733-3			
Q83	8-729-199-82	s	TRANSISTOR 2SD998			
Q181	8-729-140-96	s	TRANSISTOR 2SD774-4			
Q182	8-729-140-93	s	TRANSISTOR 2SB733-3			
Q183	8-729-199-82	s	TRANSISTOR 2SD998			
R1	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R2	1-249-417-11	s	CARBON	1K	5%	1/4W
R3	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R4	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R5	1-249-429-11	s	CARBON	10K	5%	1/4W
R6	1-249-409-11	s	CARBON	220	5%	1/4W
R7	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R8	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R10	1-249-393-11	s	CARBON	10	5%	1/4W
R21	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R22	1-249-417-11	s	CARBON	1K	5%	1/4W
R23	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R24	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R25	1-249-429-11	s	CARBON	10K	5%	1/4W
R26	1-249-409-11	s	CARBON	220	5%	1/4W
R27	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R28	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R30	1-249-393-11	s	CARBON	10	5%	1/4W
R41	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R42	1-249-417-11	s	CARBON	1K	5%	1/4W
R43	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R44	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R45	1-249-429-11	s	CARBON	10K	5%	1/4W
R46	1-249-409-11	s	CARBON	220	5%	1/4W
R47	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R48	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R50	1-249-393-11	s	CARBON	10	5%	1/4W
R61	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R62	1-249-417-11	s	CARBON	1K	5%	1/4W
R63	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R64	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R65	1-249-429-11	s	CARBON	10K	5%	1/4W
R66	1-249-409-11	s	CARBON	220	5%	1/4W
R67	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R68	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R70	1-249-393-11	s	CARBON	10	5%	1/4W
R81	1-249-427-11	s	CARBON	6.8K	5%	1/4W
R82	1-249-399-11	s	CARBON	33	5%	1/4W
R83	1-249-385-11	s	CARBON	2.2	5%	1/4W
R84	1-249-385-11	s	CARBON	2.2	5%	1/4W
R85	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R86	1-249-421-11	s	CARBON	2.2K	5%	1/4W

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
R87	⚠1-217-638-21	s	FUSIBLE	1.5	5%	1/4W
R88	1-249-429-11	s	CARBON	10K	5%	1/4W
R89	1-249-441-11	s	CARBON	100K	5%	1/4W
R90	1-249-393-11	s	CARBON	10	5%	1/4W
R91	1-249-439-11	s	CARBON	68K	5%	1/4W
R92	1-249-393-11	s	CARBON	10	5%	1/4W
R101	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R102	1-249-417-11	s	CARBON	1K	5%	1/4W
R103	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R104	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R105	1-249-429-11	s	CARBON	10K	5%	1/4W
R106	1-249-409-11	s	CARBON	220	5%	1/4W
R107	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R108	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R110	1-249-393-11	s	CARBON	10	5%	1/4W
R121	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R122	1-249-417-11	s	CARBON	1K	5%	1/4W
R123	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R124	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R125	1-249-429-11	s	CARBON	10K	5%	1/4W
R126	1-249-409-11	s	CARBON	220	5%	1/4W
R127	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R128	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R130	1-249-393-11	s	CARBON	10	5%	1/4W
R141	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R142	1-249-417-11	s	CARBON	1K	5%	1/4W
R143	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R144	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R145	1-249-429-11	s	CARBON	10K	5%	1/4W
R146	1-249-409-11	s	CARBON	220	5%	1/4W
R147	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R148	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R150	1-249-393-11	s	CARBON	10	5%	1/4W
R161	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R162	1-249-417-11	s	CARBON	1K	5%	1/4W
R163	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R164	⚠1-212-869-00	s	FUSIBLE	33	5%	1/4W
R165	1-249-429-11	s	CARBON	10K	5%	1/4W
R166	1-249-409-11	s	CARBON	220	5%	1/4W
R167	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R168	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R170	1-249-393-11	s	CARBON	10	5%	1/4W
R181	1-249-430-11	s	CARBON	12k	5%	1/4W
R182	1-249-399-11	s	CARBON	33	5%	1/4W
R183	1-249-385-11	s	CARBON	2.2	5%	1/4W
R184	1-249-385-11	s	CARBON	2.2	5%	1/4W
R185	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R186	1-249-421-11	s	CARBON	2.2K	5%	1/4W
R187	⚠1-217-638-21	s	FUSIBLE	1.5	5%	1/4W
R188	1-249-429-11	s	CARBON	10K	5%	1/4W
R189	1-249-441-11	s	CARBON	100K	5%	1/4W
R190	1-249-393-11	s	CARBON	10	5%	1/4W
R191	1-249-439-11	s	CARBON	68K	5%	1/4W
R192	1-249-393-11	s	CARBON	10	5%	1/4W
RV1	1-230-523-11	s	RES, ADJ, METAL 10K			
RV21	1-230-523-11	s	RES, ADJ, METAL 10K			
RV41	1-230-523-11	s	RES, ADJ, METAL 10K			
RV61	1-230-523-11	s	RES, ADJ, METAL 10K			
RV101	1-230-523-11	s	RES, ADJ, METAL 10K			

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
RV121	1-230-523-11	s	RES, ADJ, METAL 10K			
RV141	1-230-523-11	s	RES, ADJ, METAL 10K			
RV161	1-230-523-11	s	RES, ADJ, METAL 10K			
RY81	1-515-683-11	s	RELAY			
RY82	1-515-683-11	s	RELAY			
RY181	1-515-683-11	s	RELAY			
RY182	1-515-683-11	s	RELAY			
T81	1-433-397-12	s	TRANSFORMER, BIAS OSCILLATION			
T181	1-433-397-12	s	TRANSFORMER, BIAS OSCILLATION			

CN-14 (M) BOARD

Ref. No. or Q'ty	Part No.	SP	Description
171	1-634-869-11	o	PC BOARD, CN-14
CN6	1-562-090-00	s	JACK 13P

EX-4 BOARD

Ref. No. or Q'ty	Part No.	SP	Description			
531	1-634-868-11	o	PC BOARD,EX-4			
C31	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C32	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C33	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C34	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C35	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C36	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C37	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C38	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C39	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C40	1-130-495-00	s	MYLAR	0.1uF	5%	50V
IC1	8-759-982-13	s	IC NJM7812A			
IC2	8-759-982-40	s	IC RC7912FA			
IC3	8-759-982-05	s	IC RC7805FA			
IC4	8-759-982-05	s	IC RC7805FA			
IC7	8-759-982-13	s	IC NJM7812FA			

EX-357 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
191	1-643-620-11	o	PC BOARD, EX-357

LED-5 BOARD

Ref. No.
or Q'ty Part No. SP Description

551 1-633-867-13 o PC BOARD, LED-5

D1 8-719-313-21 s LED SEL1321G, GRN

MT-74 BOARD

Ref. No.
or Q'ty Part No. SP Description

541 A-2029-101-A o MOUNTED PWB, MT-74

C1 1-102-961-00 s CERAMIC 27PF 5% 50V
C2 1-124-589-11 s ELECT 47uF 20% 16V
C3 1-126-301-11 s ELECT 1uF 20% 50V
C4 1-130-479-00 s MYLAR 0.0047uF 5% 50V
C5 1-124-589-11 s ELECT 47uF 20% 16V

C6 1-126-301-11 s ELECT 1uF 20% 50V
C7 1-126-301-11 s ELECT 1uF 20% 50V
C21 1-102-961-00 s CERAMIC 27PF 5% 50V
C22 1-124-589-11 s ELECT 47uF 20% 16V
C23 1-126-301-11 s ELECT 1uF 20% 50V

C24 1-130-479-00 s MYLAR 0.0047uF 5% 50V
C25 1-124-589-11 s ELECT 47uF 20% 16V
C26 1-126-301-11 s ELECT 1uF 20% 50V
C27 1-126-301-11 s ELECT 1uF 20% 50V
C41 1-102-961-00 s CERAMIC 27PF 5% 50V

C42 1-124-589-11 s ELECT 47uF 20% 16V
C43 1-126-301-11 s ELECT 1uF 20% 50V
C44 1-130-479-00 s MYLAR 0.0047uF 5% 50V
C45 1-124-589-11 s ELECT 47uF 20% 16V
C46 1-126-301-11 s ELECT 1uF 20% 50V

C47 1-126-301-11 s ELECT 1uF 20% 50V
C61 1-102-961-00 s CERAMIC 27PF 5% 50V
C62 1-124-589-11 s ELECT 47uF 20% 16V
C63 1-126-301-11 s ELECT 1uF 20% 50V
C64 1-130-479-00 s MYLAR 0.0047uF 5% 50V

C65 1-124-589-11 s ELECT 47uF 20% 16V
C66 1-126-301-11 s ELECT 1uF 20% 50V
C67 1-126-301-11 s ELECT 1uF 20% 50V

CN2 1-560-463-00 o PIN, CONNECTOR 8P

D1 8-719-101-61 s DIODE RD6.2EL1
D2 8-719-946-39 s DIODE GL112F9
D21 8-719-101-61 s DIODE RD6.2EL1
D22 8-719-946-39 s DIODE GL112F9
D41 8-719-101-61 s DIODE RD6.2EL1

D42 8-719-946-39 s DIODE GL112F9
D61 8-719-101-61 s DIODE RD6.2EL1
D62 8-719-946-39 s DIODE GL112F9

IC1 8-759-100-06 s IC UPC4556C
IC2 8-759-945-01 s IC IR2E30
IC22 8-759-945-01 s IC IR2E30
IC41 8-759-100-06 s IC UPC4556C
IC42 8-759-945-01 s IC IR2E30

IC62 8-759-945-01 s IC IR2E30

R1 1-249-429-11 s CARBON 10K 5% 1/4W
R2 1-249-429-11 s CARBON 10K 5% 1/4W
R3 ⚠1-212-869-00 s FUSIBLE 33 5% 1/4W
R4 1-249-397-11 s CARBON 22 5% 1/4W
R5 1-249-440-11 s CARBON 82K 5% 1/4W

R6 1-249-426-11 s CARBON 5.6K 5% 1/4W
R7 1-249-431-11 s CARBON 15K 5% 1/4W
R21 1-249-429-11 s CARBON 10K 5% 1/4W
R22 1-249-429-11 s CARBON 10K 5% 1/4W
R23 ⚠1-212-869-00 s FUSIBLE 33 5% 1/4W

R24 1-249-397-11 s CARBON 22 5% 1/4W
R25 1-249-440-11 s CARBON 82K 5% 1/4W

(MT-74 BOARD)

Ref. No.
or Q'ty Part No. SP Description

R26 1-249-426-11 s CARBON 5.6K 5% 1/4W
R27 1-249-431-11 s CARBON 15K 5% 1/4W
R41 1-249-429-11 s CARBON 10K 5% 1/4W
R42 1-249-429-11 s CARBON 10K 5% 1/4W
R43 ⚠1-212-869-00 s FUSIBLE 33 5% 1/4W

R44 1-249-397-11 s CARBON 22 5% 1/4W
R45 1-249-440-11 s CARBON 82K 5% 1/4W
R46 1-249-426-11 s CARBON 5.6K 5% 1/4W
R47 1-249-431-11 s CARBON 15K 5% 1/4W
R61 1-249-429-11 s CARBON 10K 5% 1/4W

R62 1-249-429-11 s CARBON 10K 5% 1/4W
R63 ⚠1-212-869-00 s FUSIBLE 33 5% 1/4W
R64 1-249-397-11 s CARBON 22 5% 1/4W
R65 1-249-440-11 s CARBON 82K 5% 1/4W
R66 1-249-426-11 s CARBON 5.6K 5% 1/4W

R67 1-249-431-11 s CARBON 15K 5% 1/4W
R80 1-249-416-11 s CARBON 820 5% 1/4W

S41 1-554-667-31 s SWITCH, SLIDE

SW-7 (M) BOARD

Ref. No.
or Q'ty Part No. SP Description

161 1-634-859-11 o PC BOARD, SW-7

CN1 1-560-465-00 o PIN, CONNECTOR 12P

D2 8-719-311-21 s DIODE SEL1121R
D3 8-719-311-21 s DIODE SEL1121R
D4 8-719-311-21 s DIODE SEL1121R
D5 8-719-311-21 s DIODE SEL1121R
D6 8-719-311-21 s DIODE SEL1121R

S1 1-554-937-11 s SWITCH, PUSH
S2 1-554-937-11 s SWITCH, PUSH
S3 1-554-937-11 s SWITCH, PUSH
S4 1-554-937-11 s SWITCH, PUSH
S5 1-554-481-00 s SWITCH, SLIDE

SY-3 (M) BOARD

Ref. No.
or Q'ty Part No. SP Description

521 A-2019-223-A o MOUNTED PWB, SY-3(M)
1pc 3-164-251-01 o SUPPORT, PC BOARD
1pc 7-682-903-11 s SCREW +PWH 3X6
1pc 3-164-252-01 o HEAT SINK
5pcs 7-682-547-09 s SCREW +B 3X6

6pcs ⚠1-533-189-11 s HOLDER, FUSE

BZ501 1-529-069-11 s BUZZER, PIEZOELECTRIC

C1 1-126-256-11 s ELECT 4700uF 20% 35V
C2 1-126-256-11 s ELECT 4700uF 20% 35V
C3 1-126-256-11 s ELECT 4700uF 20% 35V
C4 1-124-360-00 s ELECT 1000uF 20% 16V
C5 1-124-618-11 s ELECT 2200uF 20% 35V

C6 1-124-618-11 s ELECT 2200uF 20% 35V
C7 1-124-618-11 s ELECT 2200uF 20% 35V
C8 1-124-477-11 s ELECT 47uF 20% 25V
C9 1-124-477-11 s ELECT 47uF 20% 25V
C10 1-124-477-11 s ELECT 47uF 20% 25V

C11 1-124-477-11 s ELECT 47uF 20% 25V
C12 1-124-477-11 s ELECT 47uF 20% 25V
C13 1-161-057-00 s CERAMIC 0.033uF 10% 50V
C14 1-102-962-00 s CERAMIC 30PF 5% 50V
C15 1-102-962-00 s CERAMIC 30PF 5% 50V

C16 1-124-477-11 s ELECT 47uF 20% 25V
C17 1-124-477-11 s ELECT 47uF 20% 25V
C18 1-124-477-11 s ELECT 47uF 20% 25V
C19 1-124-477-11 s ELECT 47uF 20% 25V
C20 1-124-477-11 s ELECT 47uF 20% 25V

C21 1-161-057-00 s CERAMIC 0.033uF 10% 50V
C22 1-124-618-11 s ELECT 2200uF 20% 35V
C23 1-130-487-00 s MYLAR 0.022uF 5% 50V
C41 1-130-495-00 s MYLAR 0.1uF 5% 50V
C42 1-130-495-00 s MYLAR 0.1uF 5% 50V

C51 1-124-618-11 s ELECT 2200uF 20% 35V
C52 1-124-360-00 s ELECT 1000uF 20% 16V
C61 1-130-495-00 s MYLAR 0.1uF 5% 50V
C62 1-130-495-00 s MYLAR 0.1uF 5% 50V
C101 1-130-487-00 s MYLAR 0.022uF 5% 50V

C102 1-130-487-00 s MYLAR 0.022uF 5% 50V
C103 1-124-471-00 s ELECT 1000uF 20% 6.3V
C201 1-130-487-00 s MYLAR 0.022uF 5% 50V
C202 1-130-487-00 s MYLAR 0.022uF 5% 50V
C203 1-124-471-00 s ELECT 1000uF 20% 6.3V

C301 1-130-487-00 s MYLAR 0.022uF 5% 50V
C302 1-130-487-00 s MYLAR 0.022uF 5% 50V
C303 1-124-471-00 s ELECT 1000uF 20% 6.3V
C401 1-130-487-00 s MYLAR 0.022uF 5% 50V
C402 1-130-487-00 s MYLAR 0.022uF 5% 50V

C403 1-124-471-00 s ELECT 1000uF 20% 6.3V

CF1 1-567-875-11 s VIBRATOR, CERAMIC

CN1 1-564-242-00 o PIN, CONNECTOR 5P
CN2 1-508-736-00 o PIN, CONNECTOR 10P
CN4 1-564-320-00 s PIN, CONNECTOR (B2P-VH) 2P
CN6 1-560-470-00 o PIN, CONNECTOR 8P
CN101 1-560-469-00 o PIN, CONNECTOR 6P

CN201 1-560-469-00 o PIN, CONNECTOR 6P
CN301 1-560-469-00 o PIN, CONNECTOR 6P

(SY-3 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
CN401	1-560-469-00	o	PIN, CONNECTOR 6P
CN502	1-560-466-00	o	PIN, CONNECTOR 3P
D1	8-719-505-60	s	DIODE S5VB20
D2	8-719-505-60	s	DIODE S5VB20
D3	8-719-200-02	s	DIODE 10E2
D4	8-719-200-02	s	DIODE 10E2
D5	8-719-911-19	s	DIODE 1SS119
D6	8-719-911-19	s	DIODE 1SS119
D7	8-719-200-02	s	DIODE 10E2
D101	8-719-200-02	s	DIODE 10E2
D102	8-719-911-19	s	DIODE 1SS119
D103	8-719-911-19	s	DIODE 1SS119
D104	8-719-911-19	s	DIODE 1SS119
D201	8-719-200-02	s	DIODE 10E2
D202	8-719-911-19	s	DIODE 1SS119
D203	8-719-911-19	s	DIODE 1SS119
D204	8-719-911-19	s	DIODE 1SS119
D301	8-719-200-02	s	DIODE 10E2
D302	8-719-911-19	s	DIODE 1SS119
D303	8-719-911-19	s	DIODE 1SS119
D304	8-719-911-19	s	DIODE 1SS119
D401	8-719-200-02	s	DIODE 10E2
D402	8-719-911-19	s	DIODE 1SS119
D403	8-719-911-19	s	DIODE 1SS119
D404	8-719-911-19	s	DIODE 1SS119
D502	8-719-911-19	s	DIODE 1SS119
D503	8-719-911-19	s	DIODE 1SS119
D504	8-719-911-19	s	DIODE 1SS119
D505	8-719-911-19	s	DIODE 1SS119
F1	⚠1-532-745-11	s	FUSE 3.15A 125V
F2	⚠1-532-744-11	s	FUSE, GLASS TUBE
F3	⚠1-532-744-11	s	FUSE, GLASS TUBE
IC5	8-759-913-42	s	IC PST520C-2
IC6	8-759-635-02	s	IC M50747SP-C42SP
IC8	8-759-701-75	s	IC NJM7805FA
IC101	8-759-984-03	s	IC LM339N
IC201	8-759-984-03	s	IC LM339N
IC301	8-759-984-03	s	IC LM339N
IC401	8-759-984-03	s	IC LM339N
PS1	⚠1-532-679-21	s	LINK, IC
PS2	⚠1-532-679-21	s	LINK, IC
Q1	8-729-900-80	s	TRANSISTOR DTC114ES
Q2	8-729-199-82	s	TRANSISTOR 2SD998
Q4	8-729-900-80	s	TRANSISTOR DTC114ES
Q5	8-729-900-80	s	TRANSISTOR DTC114ES
Q6	8-729-900-80	s	TRANSISTOR DTC114ES
Q102	8-729-140-93	s	TRANSISTOR 2SB733-3
Q103	8-729-900-61	s	TRANSISTOR DTA114ES
Q104	8-729-900-61	s	TRANSISTOR DTA114ES
Q112	8-729-140-93	s	TRANSISTOR 2SB733-3
Q113	8-729-900-61	s	TRANSISTOR DTA114ES
Q114	8-729-900-61	s	TRANSISTOR DTA114ES
Q121	8-729-900-61	s	TRANSISTOR DTA114ES
Q122	8-729-140-96	s	TRANSISTOR 2SD774-4
Q123	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q202	8-729-140-93	s	TRANSISTOR 2SB733-3

(SY-3 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
Q203	8-729-900-61	s	TRANSISTOR DTA114ES
Q204	8-729-900-61	s	TRANSISTOR DTA114ES
Q212	8-729-140-93	s	TRANSISTOR 2SB733-3
Q213	8-729-900-61	s	TRANSISTOR DTA114ES
Q214	8-729-900-61	s	TRANSISTOR DTA114ES
Q221	8-729-900-61	s	TRANSISTOR DTA114ES
Q222	8-729-140-96	s	TRANSISTOR 2SD774-4
Q223	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q302	8-729-140-93	s	TRANSISTOR 2SB733-3
Q303	8-729-900-61	s	TRANSISTOR DTA114ES
Q304	8-729-900-61	s	TRANSISTOR DTA114ES
Q312	8-729-140-93	s	TRANSISTOR 2SB733-3
Q313	8-729-900-61	s	TRANSISTOR DTA114ES
Q314	8-729-900-61	s	TRANSISTOR DTA114ES
Q321	8-729-900-61	s	TRANSISTOR DTA114ES
Q322	8-729-140-96	s	TRANSISTOR 2SD774-4
Q323	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q402	8-729-140-93	s	TRANSISTOR 2SB733-3
Q403	8-729-900-61	s	TRANSISTOR DTA114ES
Q404	8-729-900-61	s	TRANSISTOR DTA114ES
Q412	8-729-140-93	s	TRANSISTOR 2SB733-3
Q413	8-729-900-61	s	TRANSISTOR DTA114ES
Q414	8-729-900-61	s	TRANSISTOR DTA114ES
Q421	8-729-900-61	s	TRANSISTOR DTA114ES
Q422	8-729-140-96	s	TRANSISTOR 2SD774-4
Q423	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q501	8-729-900-80	s	TRANSISTOR DTC114ES
Q502	8-729-900-61	s	TRANSISTOR DTA114ES
Q503	8-729-900-61	s	TRANSISTOR DTA114ES
Q504	8-729-900-61	s	TRANSISTOR DTA114ES
Q505	8-729-900-61	s	TRANSISTOR DTA114ES
R1	1-249-441-11	s	CARBON 100K 5% 1/4W
R2	1-249-416-11	s	CARBON 820 5% 1/4W
R3	1-249-416-11	s	CARBON 820 5% 1/4W
R4	1-249-441-11	s	CARBON 100K 5% 1/4W
R5	1-249-429-11	s	CARBON 10K 5% 1/4W
R6	1-249-401-11	s	CARBON 47 5% 1/4W
R7	1-247-903-00	s	CARBON 1M 5% 1/4W
R8	1-249-429-11	s	CARBON 10K 5% 1/4W
R17	1-249-416-11	s	CARBON 820 5% 1/4W
R18	1-249-416-11	s	CARBON 820 5% 1/4W
R19	1-249-416-11	s	CARBON 820 5% 1/4W
R22	1-249-441-11	s	CARBON 100K 5% 1/4W
R102	1-249-417-11	s	CARBON 1K 5% 1/4W
R104	1-249-429-11	s	CARBON 10K 5% 1/4W
R105	1-249-396-11	s	CARBON 18 5% 1/4W
R112	1-249-417-11	s	CARBON 1K 5% 1/4W
R114	1-249-429-11	s	CARBON 10K 5% 1/4W
R115	1-249-416-11	s	CARBON 820 5% 1/4W
R116	1-249-429-11	s	CARBON 10K 5% 1/4W
R117	1-249-401-11	s	CARBON 47 5% 1/4W
R122	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R202	1-249-417-11	s	CARBON 1K 5% 1/4W
R204	1-249-429-11	s	CARBON 10K 5% 1/4W
R205	1-249-396-11	s	CARBON 18 5% 1/4W
R212	1-249-417-11	s	CARBON 1K 5% 1/4W
R214	1-249-429-11	s	CARBON 10K 5% 1/4W
R215	1-249-416-11	s	CARBON 820 5% 1/4W

(SY-3 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R216	1-249-429-11	s	CARBON 10K 5% 1/4W
R217	1-249-401-11	s	CARBON 47 5% 1/4W
R222	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R302	1-249-417-11	s	CARBON 1K 5% 1/4W
R304	1-249-429-11	s	CARBON 10K 5% 1/4W
R305	1-249-396-11	s	CARBON 18 5% 1/4W
R312	1-249-417-11	s	CARBON 1K 5% 1/4W
R314	1-249-429-11	s	CARBON 10K 5% 1/4W
R315	1-249-416-11	s	CARBON 820 5% 1/4W
R316	1-249-429-11	s	CARBON 10K 5% 1/4W
R317	1-249-401-11	s	CARBON 47 5% 1/4W
R322	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R402	1-249-417-11	s	CARBON 1K 5% 1/4W
R404	1-249-429-11	s	CARBON 10K 5% 1/4W
R405	1-249-396-11	s	CARBON 18 5% 1/4W
R412	1-249-417-11	s	CARBON 1K 5% 1/4W
R414	1-249-429-11	s	CARBON 10K 5% 1/4W
R415	1-249-416-11	s	CARBON 820 5% 1/4W
R416	1-249-429-11	s	CARBON 10K 5% 1/4W
R417	1-249-401-11	s	CARBON 47 5% 1/4W
R422	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R501	1-249-429-11	s	CARBON 10K 5% 1/4W
R502	1-249-413-11	s	CARBON 470 5% 1/4W
R503	1-249-413-11	s	CARBON 470 5% 1/4W
R504	1-249-413-11	s	CARBON 470 5% 1/4W
R505	1-249-413-11	s	CARBON 470 5% 1/4W
R506	1-249-416-11	s	CARBON 820 5% 1/4W
R507	1-249-416-11	s	CARBON 820 5% 1/4W
R508	1-249-429-11	s	CARBON 10K 5% 1/4W
R509	1-249-416-11	s	CARBON 820 5% 1/4W
R510	1-249-416-11	s	CARBON 820 5% 1/4W
RB1	1-235-195-00	s	RES BLOCK 10KX8
RB2	1-235-195-00	s	RES BLOCK 10KX8
RB3	1-231-533-00	s	RESISTOR BLOCK 10Kx4

AC-3 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
151	1-634-864-11	o	PC BOARD, AC-3
CN1	⚠1-580-375-11	s	INLET 3P

VR-148 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
181	1-643-619-11	o	PC BOARD, VR-148
RV1	1-241-059-11	s	RES, VAR, CARBON 10K

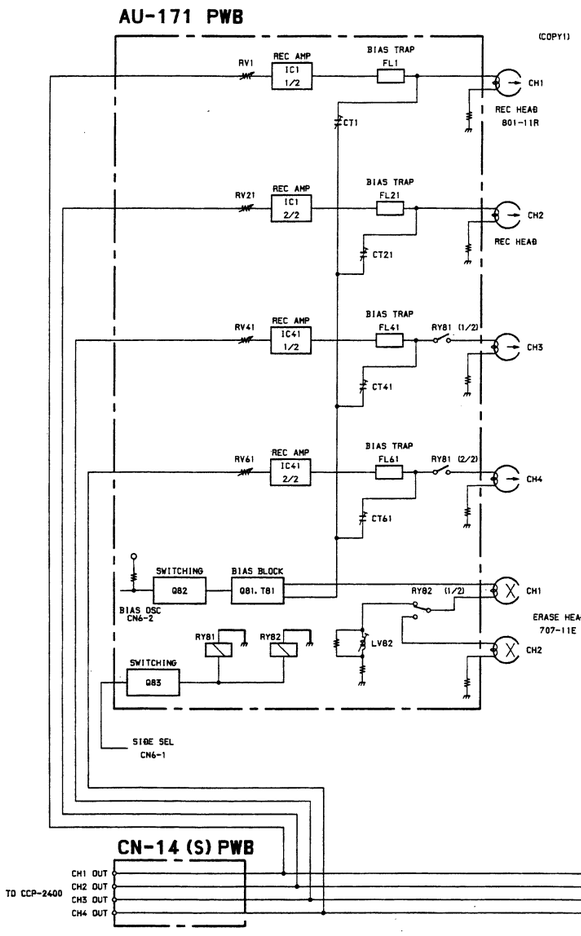
FRAME

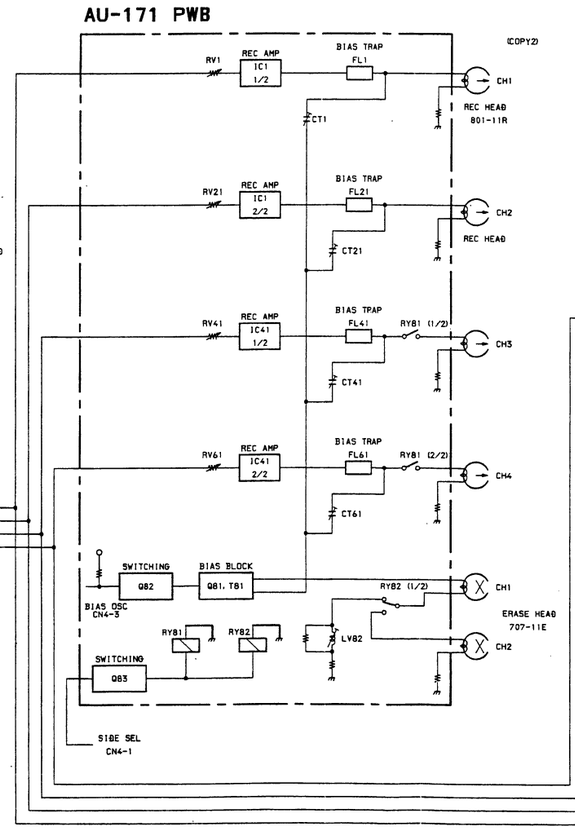
Ref. No. or Q'ty	Part No.	SP	Description
102	1-541-747-12	s	MOTOR, CAPSTAN
103	1-543-934-11	s	HEAD, MAGNETIC (PLAYBACK)
104	1-543-801-11	s	HEAD, MAGNETIC (REC)
105	1-543-707-11	s	HEAD, MAGNETIC
M100	1-541-766-11	s	MOTOR, DC
M200	1-541-766-11	s	MOTOR, DC
M300	1-541-766-11	s	MOTOR, DC
M400	1-541-766-11	s	MOTOR, DC
M110	1-541-163-00	s	MOTOR, DC
M210	1-541-163-00	s	MOTOR, DC
M310	1-541-163-00	s	MOTOR, DC
M410	1-541-163-00	s	MOTOR, DC
PM100	1-454-495-11	s	SOLENOID, PLUNGER
PM200	1-454-495-11	s	SOLENOID, PLUNGER
PM300	1-454-495-11	s	SOLENOID, PLUNGER
PM400	1-454-495-11	s	SOLENOID, PLUNGER
S1	⚠1-570-744-21	s	SWITCH, AC POWER
T1	⚠1-449-928-11	s	TRANSFORMER, POWER
	1-690-980-11	o	CABLE, CONNECTION 12P
	1-690-979-11	o	CABLE, CONNECTION 12P

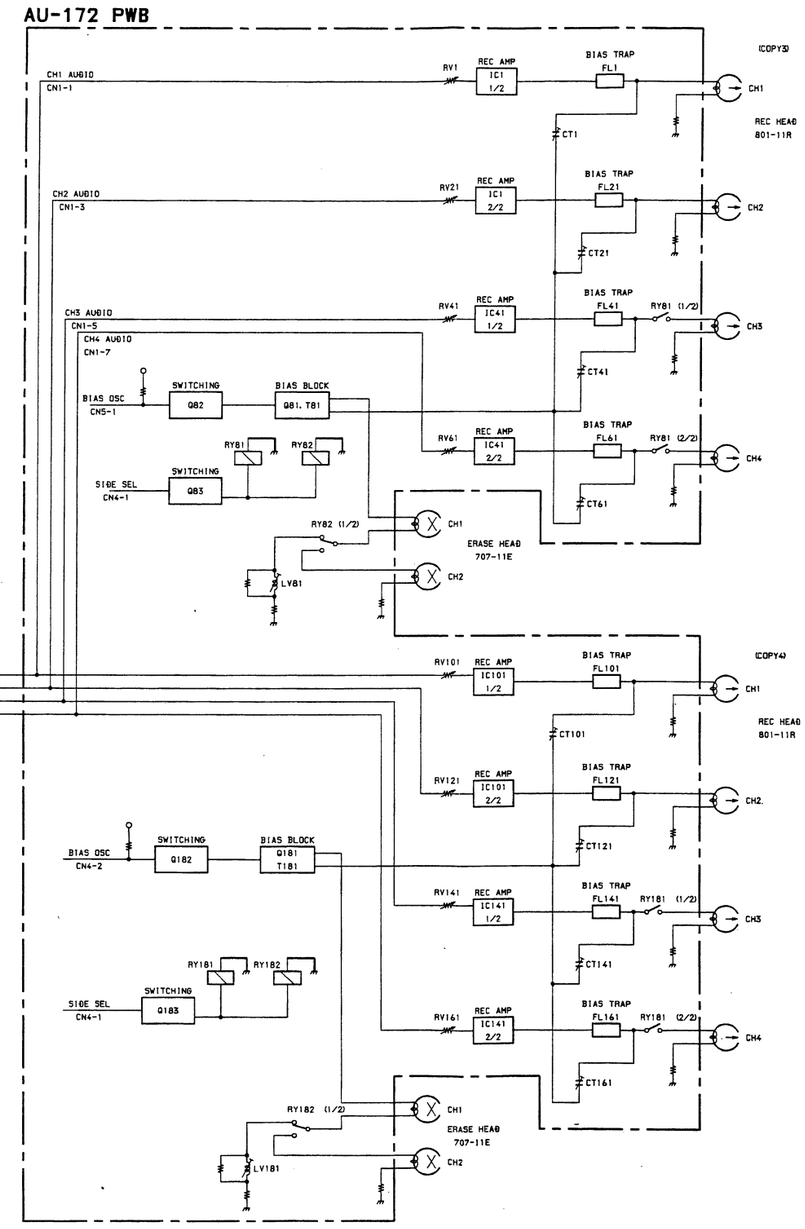
FRAME No.	Part No.	SP	Description
101	1-533-189-11	s	HOLDER,FUSE
102	1-541-747-12	s	MOTOR,CAPSTAN
103	1-543-687-11	s	HEAD,MAGNETIC(PLAYBACK)
104	1-543-688-11	s	HEAD,MAGNETIC(RECORD)
105	1-543-707-11	s	HEAD,MAGNETIC(ERASE)
111	1-558-070-11	o	LEAD(WITH CONNECTOR) 6P(PLAYBACK)
112	1-558-071-11	o	LEAD(WITH CONNECTOR) 8P(RECORD)
F1	⚠1-532-745-11	s	FUSE, GLASS TUBE 3.15A 125V (FOR U MODEL ONLY)
	⚠1-532-237-00	s	FUSE, TIME-LAG 3.15A 250V (FOR EK MODEL ONLY)
F2	⚠1-532-744-11	s	FUSE, GLASS TUBE 2.5A 125V (FOR U MODEL ONLY)
	⚠1-532-286-00	s	FUSE, TIME-LAG 2.5A 250V (FOR EK MODEL ONLY)
F3	⚠1-532-744-11	s	FUSE, GLASS TUBE 2.5A 125V (FOR U MODEL ONLY)
	⚠1-532-286-00	s	FUSE, TIME-LAG 2.5A 250V (FOR EK MODEL ONLY)
T1	⚠1-449-928-11	s	TRANSFORMER, POWER(FOR U MODEL ONLY)
	⚠1-426-983-11	s	TRANSFORMER, POWER(FOR EK MODEL ONLY)
S1	⚠1-570-744-21	s	SWITCH, AC, POWER
M100	1-541-163-51	s	MOTOR
M200	1-541-163-51	s	MOTOR
M300	1-541-163-51	s	MOTOR
M400	1-541-163-51	s	MOTOR
M110	1-541-766-12	s	MOTOR,DC
M210	1-541-766-12	s	MOTOR,DC
M310	1-541-766-12	s	MOTOR,DC
M410	1-541-766-12	s	MOTOR,DC
PM100	1-454-495-11	s	SOLENOID,PLUNGER
PM200	1-454-495-11	s	SOLENOID,PLUNGER
PM300	1-454-495-11	s	SOLENOID,PLUNGER
PM400	1-454-495-11	s	SOLENOID,PLUNGER

SECTION 9
CCP-2400 DIAGRAMS

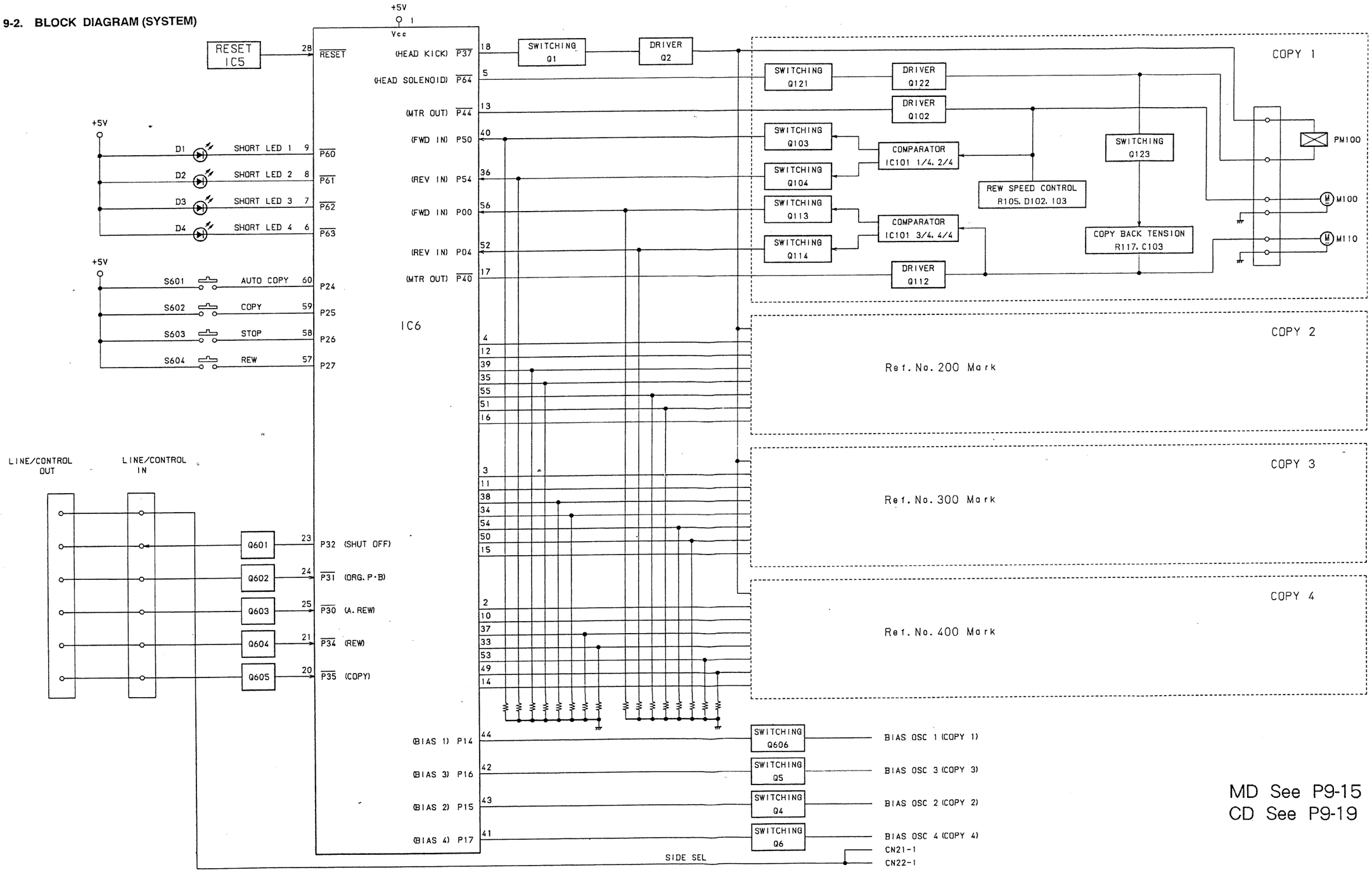
9-1. BLOCK DIAGRAM (AUDIO)





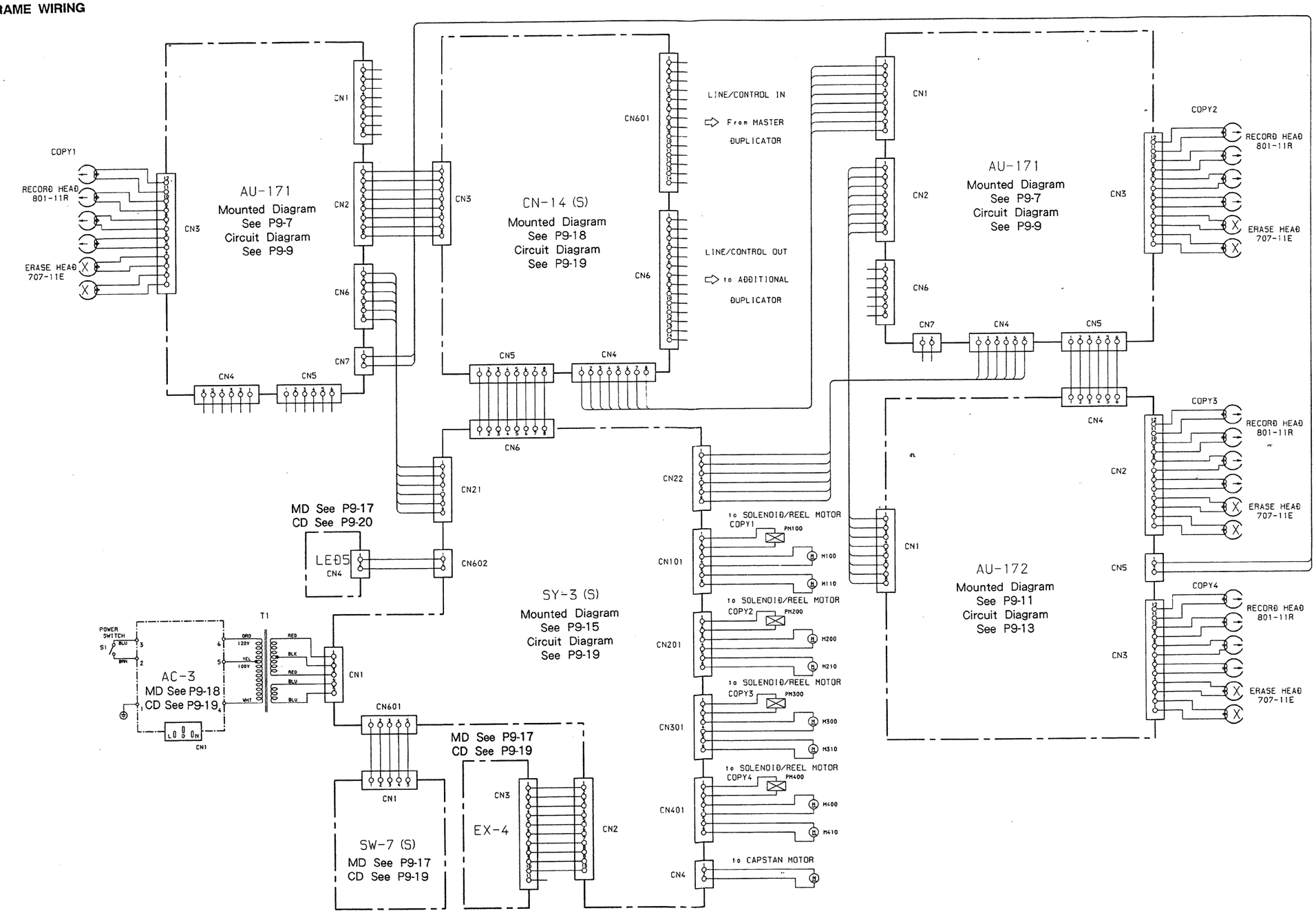


9-2. BLOCK DIAGRAM (SYSTEM)

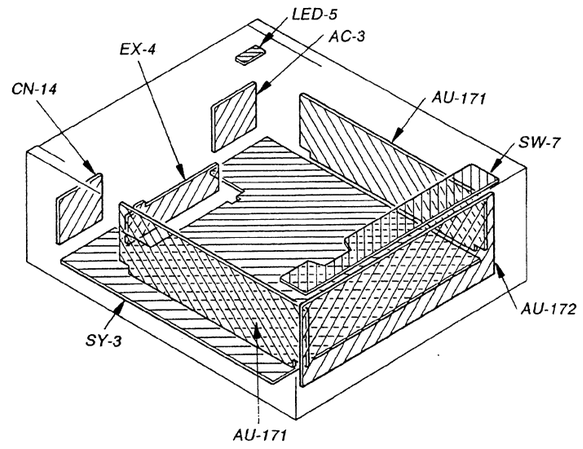


MD See P9-15
CD See P9-19

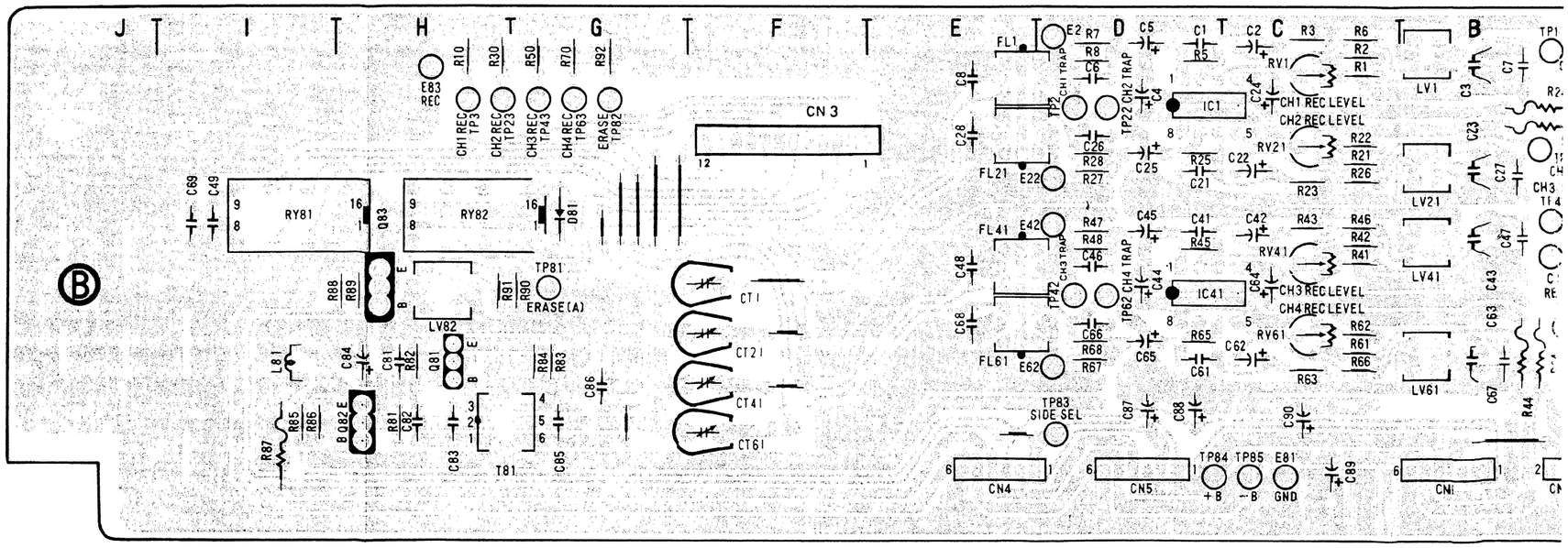
9-3. FRAME WIRING

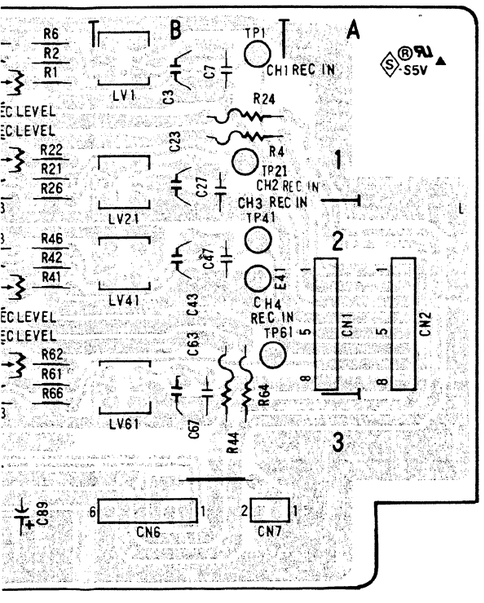


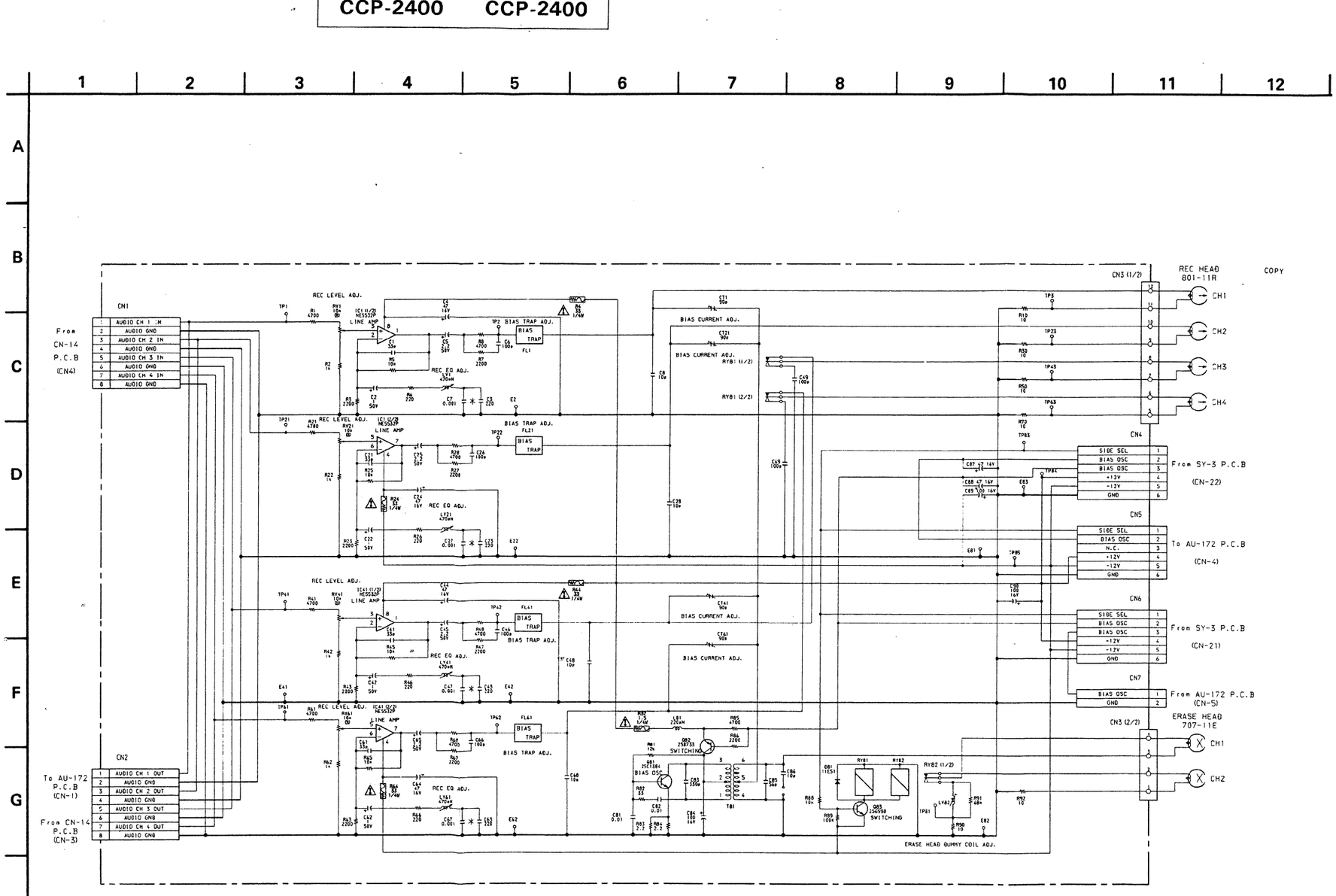
9-4. LOCATION OF THE PRINTED WIRING BOARD



9-5. AU-171 BOARD – *Soldering Side* –





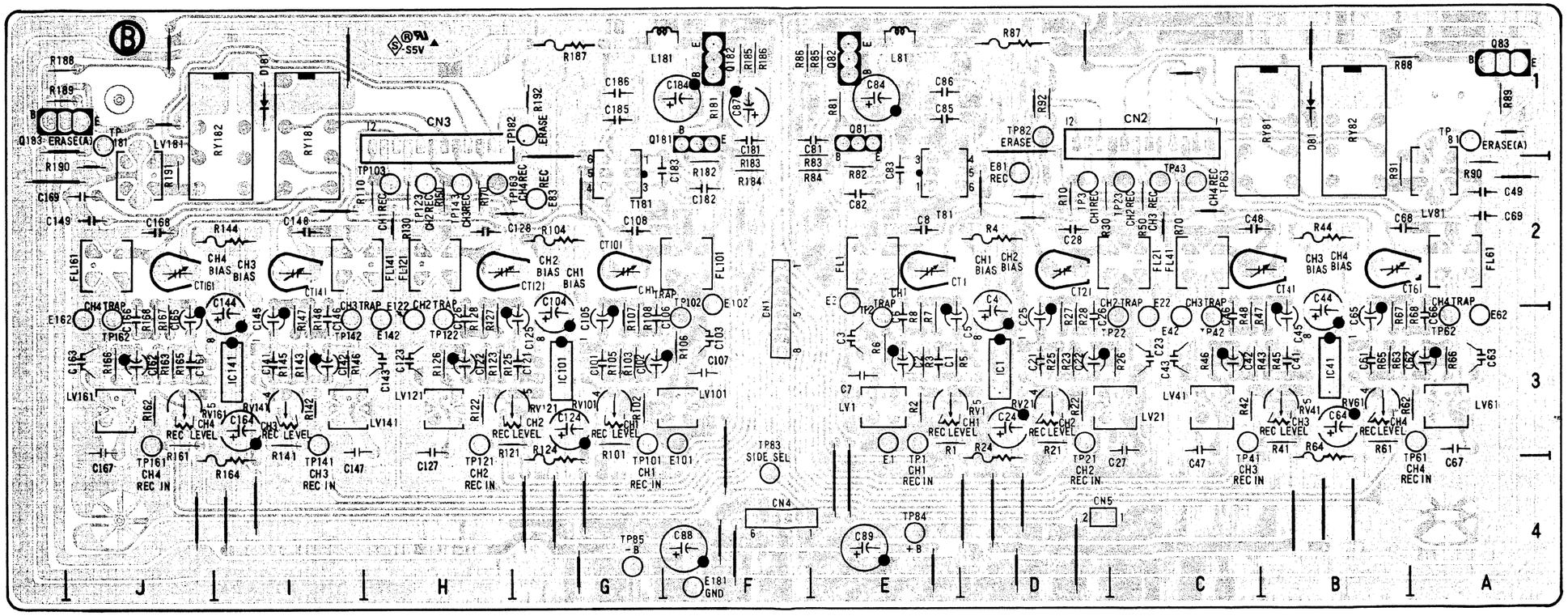


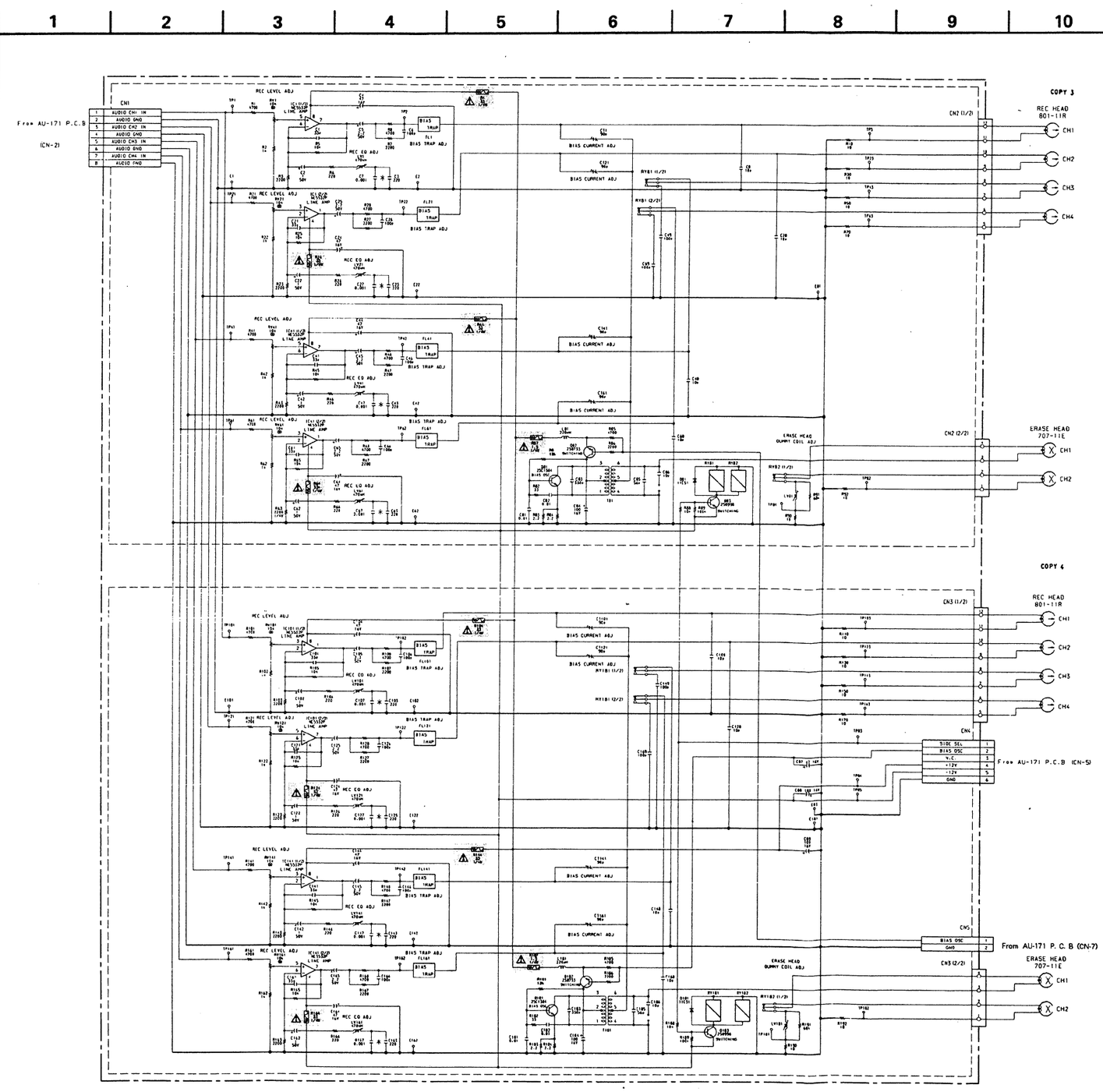
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.
- " * " mark parts are adjustment parts they have varied value.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

9-6. AU-172 BOARD – *Soldering Side* –





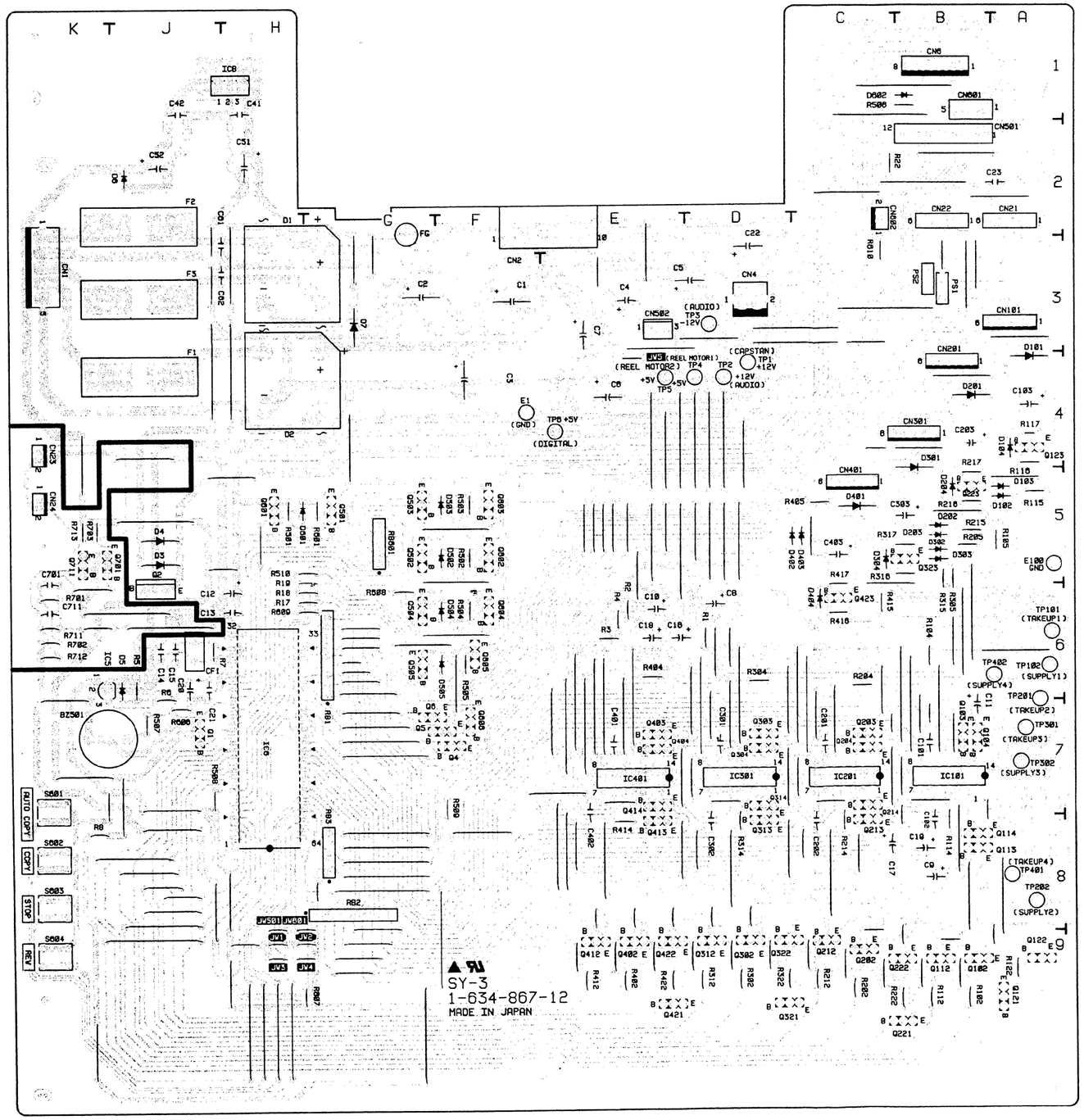
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ⚠ : fusible resistor.
- " ✱ " mark parts are adjustment parts they have varied value.

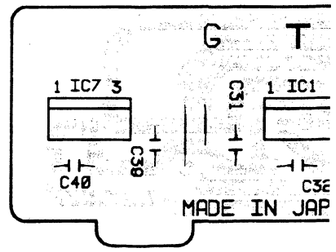
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

9-7. SY-3 (S), EX-4, CN-14 (S), AC-3, SW-7 (S), LED-5 BOARDS *– Soldering Side –*

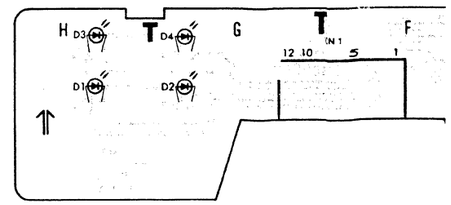
SY-3 (S) BOARD



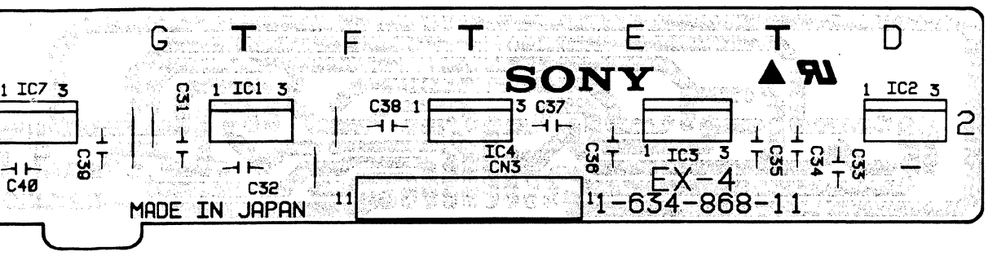
EX-4 BOARD



SW-7 (S) BOARD

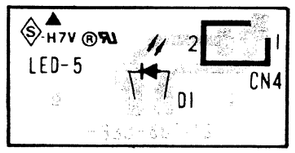


-4 BOARD



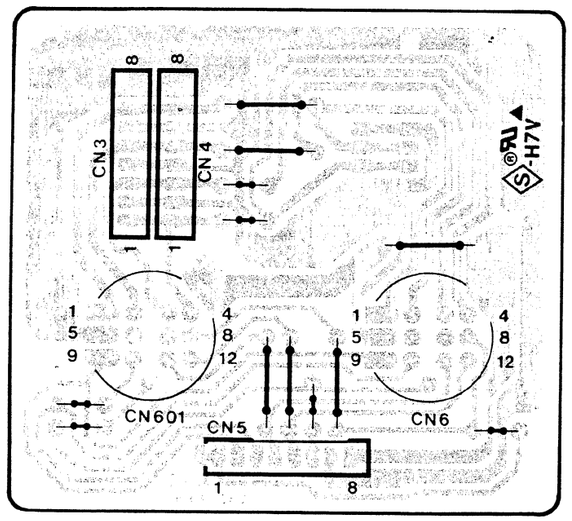
11

LED-5 BOARD



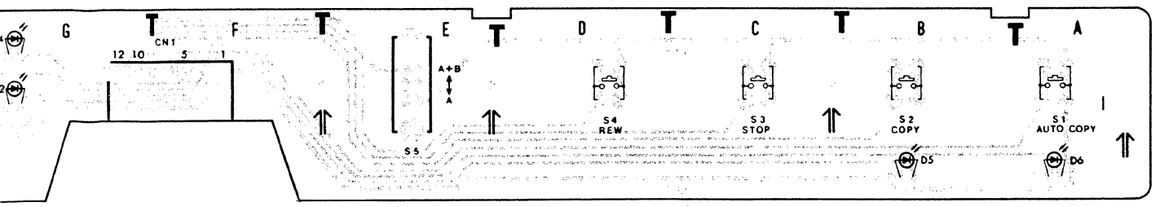
13

CN-14 (S) BOARD



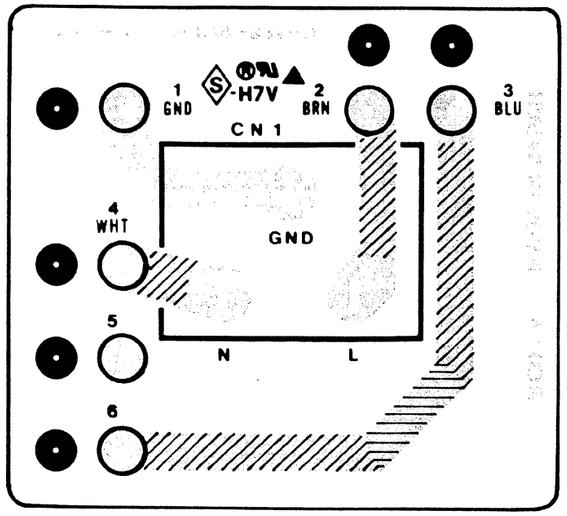
11

RD

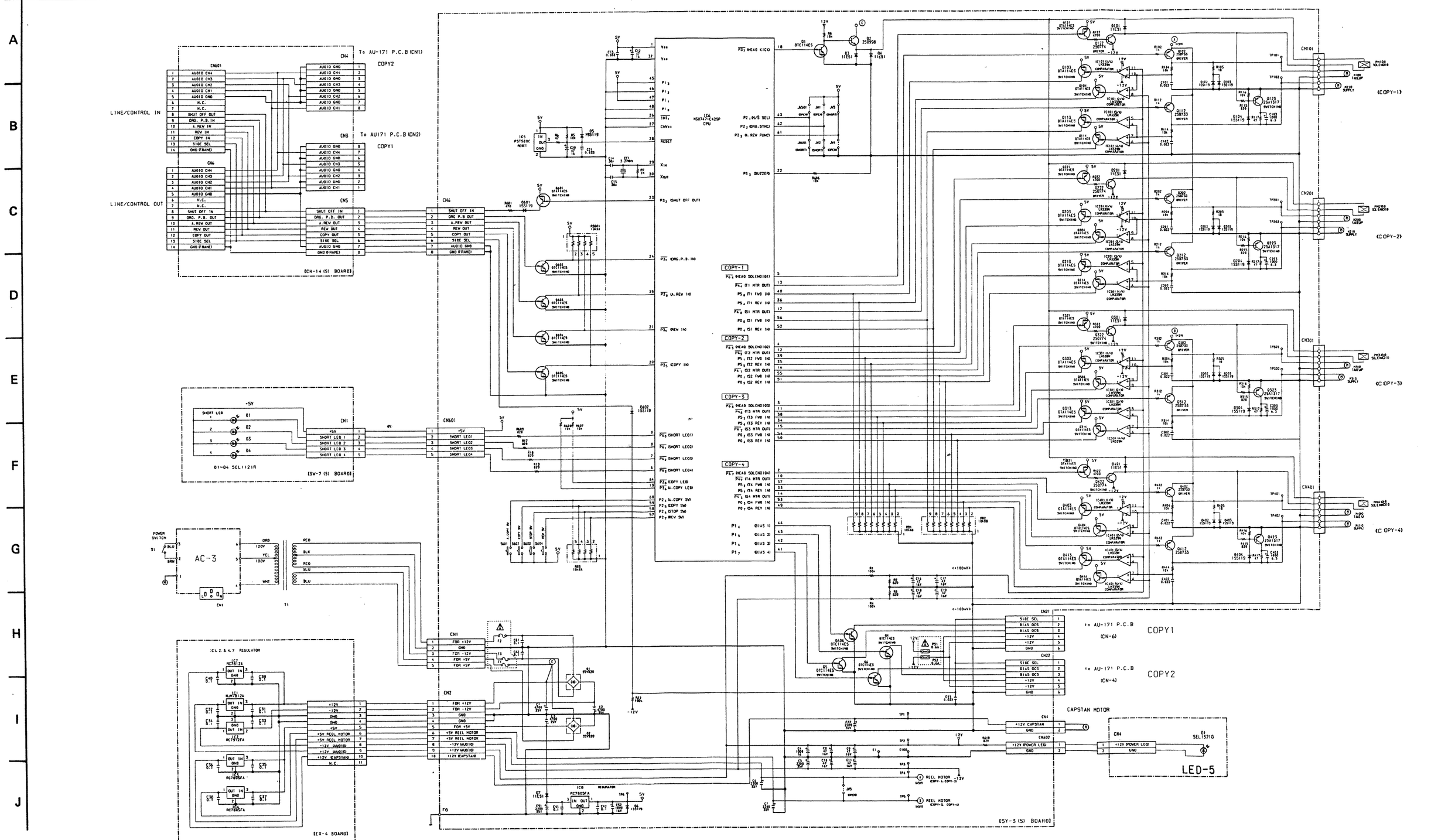


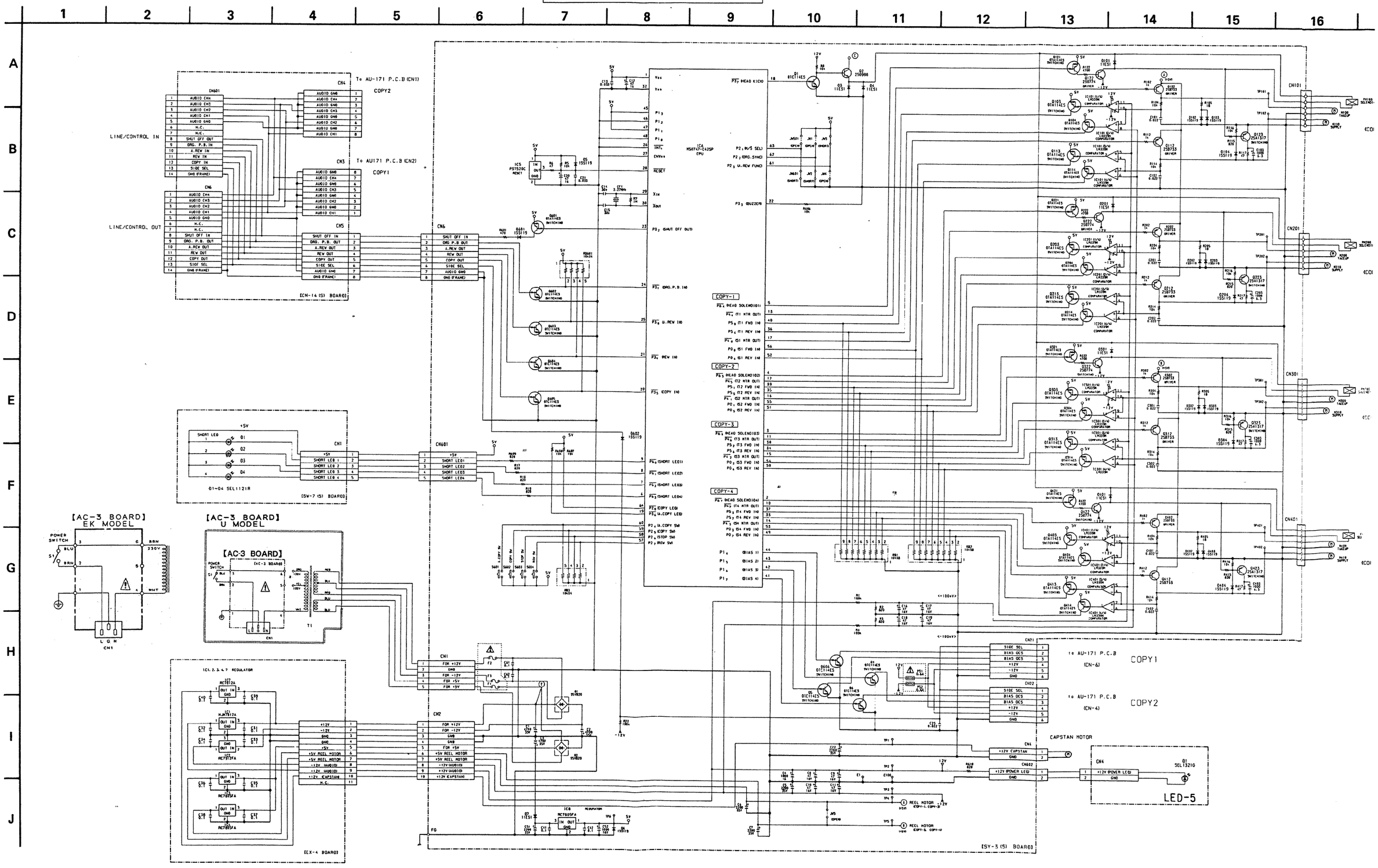
11

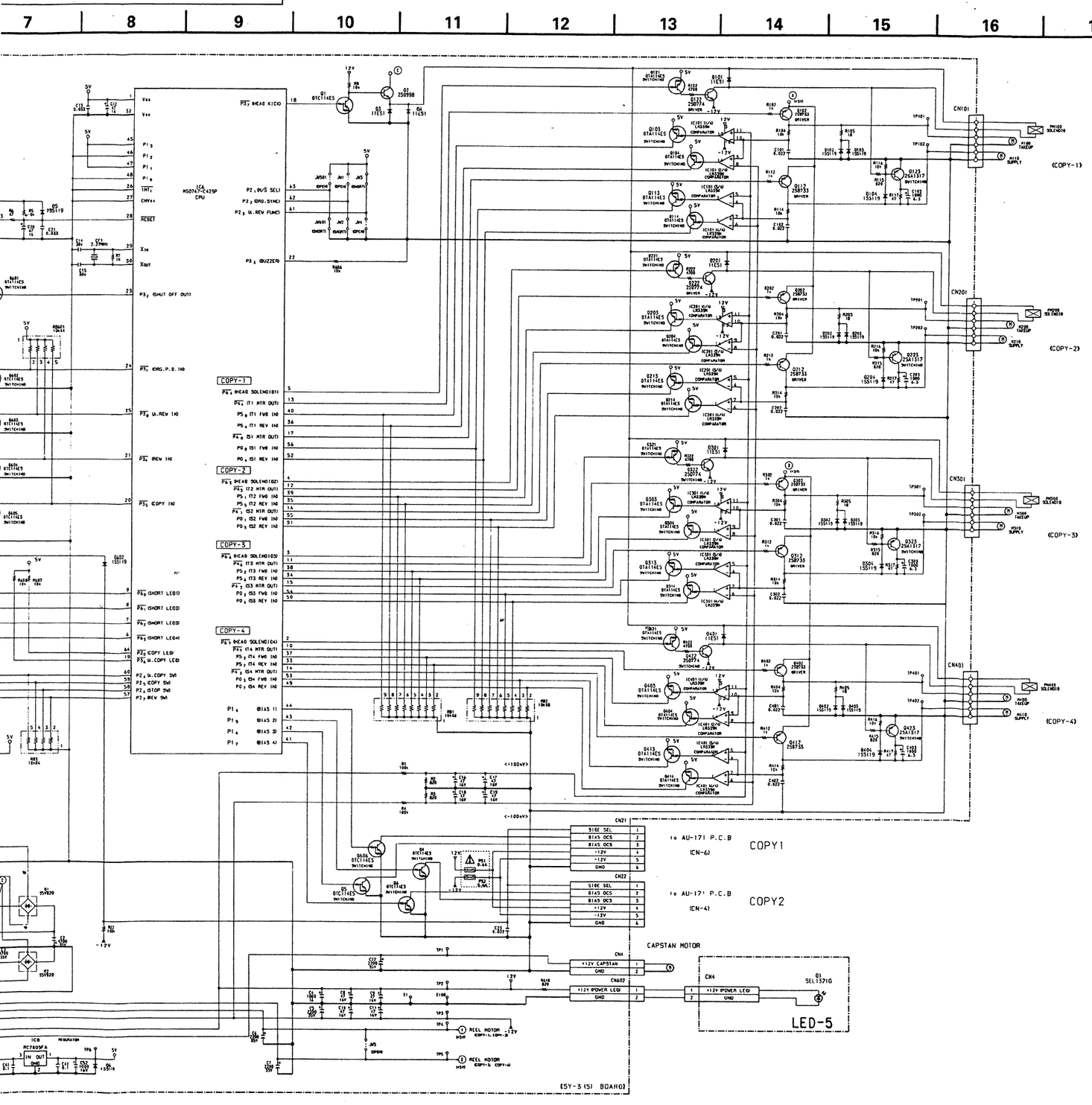
AC-3 BOARD



11


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J
CN401
AUDIO CH4
AUDIO CH3
AUDIO CH2
AUDIO CH1
AUDIO GND
N.C.
SHUT OFF OUT
ORG. P.B. IN
A.REV IN
REV IN
COPY IN
SIDE SEL
GND (FRAME)
LINE/CONTROL IN
CN4
To AU-171 P.C.B (CN1)
COPY2
CN3
To AU171 P.C.B (CN2)
COPY1
CN6
LINE/CONTROL OUT
SHUT OFF :N
ORG. P. B. OUT
A.REV OUT
REV OUT
COPY OUT
SIDE SEL
GND (FRAME)
CN-14 (S) BOARD
CN5
SHUT OFF IN
ORG. P.B. OUT
A.REV OUT
REV OUT
COPY OUT
SIDE SEL
AUDIO GND
GND (FRAME)
IC4 M50747-642SP CPU
RESET
XIN
XOUT
INT1
CNVss
P3 7 (SHUT OFF OUT)
P3 6 (ORG.P.B IN)
P3 5 (A.REV IN)
P3 4 (REV IN)
P3 3 (COPY IN)
P2 4 (A.COPY SW)
P2 3 (COPY SW)
P2 2 (STOP SW)
P2 1 (REV SW)
P3 7 (HEAD KICK)
P2 0 (R/S SEL)
P2 1 (GRD. SYNC)
P2 2 (A.REV FUNC)
P3 2 (BUZZER)
COPY-1
COPY-2
COPY-3
COPY-4
P4 5 (HEAD SOL(NO1))
P4 4 (T1 MTR OUT)
P5 0 (T1 FWD IN)
P5 1 (T1 REV IN)
P4 3 (S1 MTR OUT)
P0 0 (S1 FWD IN)
P0 1 (S1 REV IN)
P4 5 (HEAD SOL(NO2))
P4 4 (T2 MTR OUT)
P5 2 (T2 FWD IN)
P5 3 (T2 REV IN)
P4 3 (S2 MTR OUT)
P0 2 (S2 FWD IN)
P0 3 (S2 REV IN)
P4 5 (HEAD SOL(NO3))
P4 4 (T3 MTR OUT)
P5 4 (T3 FWD IN)
P5 5 (T3 REV IN)
P4 3 (S3 MTR OUT)
P0 4 (S3 FWD IN)
P0 5 (S3 REV IN)
P4 5 (HEAD SOL(NO4))
P4 4 (T4 MTR OUT)
P5 6 (T4 FWD IN)
P5 7 (T4 REV IN)
P4 3 (S4 MTR OUT)
P0 6 (S4 FWD IN)
P0 7 (S4 REV IN)
P1 4 (BIAS 1)
P1 5 (BIAS 2)
P1 6 (BIAS 3)
P1 7 (BIAS 4)
IC5 PST52C RESET
IC6 M74HC14P
IC7 M74HC123AP
IC8 RC7805FA REGULATION
IC1,2,3,4,7 REGULATION
CN1 FOR +12V GND FOR -12V FOR +5V
CN2 FOR +12V GND GND FOR +5V +5V REEL MOTOR +5V REEL MOTOR -12V (AUDIO) +12V (AUDIO) +12V (CAPSTAN) N.C.
CN401 +5V SHORT LED1 SHORT LED2 SHORT LED3 SHORT LED4
SHORT LED 1 2 3 4
01-04 SEL1121R
SW-7 (S) BOARD
EX-4 BOARD
POWER SWITCH
AC-3
CN1
T1
ORG 120V YEL 100V WHT
RED BLK RED BLU BLU
SY-3 (S) BOARD
CN21 SIDE SEL BIAS OCS BIAS OCS +12V -12V GND
CN22 SIDE SEL BIAS OCS BIAS OCS +12V -12V GND
to AU-171 P.C.B (CN-6) COPY1
to AU-171 P.C.B (CN-4) COPY2
CAPSTAN MOTOR
CN4 +12V CAPSTAN GND
CN402 +12V POWER LED GND
CN4 +12V POWER LED GND
SEL1571G
LED-5
REEL MOTOR (COPY-1, COPY-3)
REEL MOTOR (COPY-2, COPY-4)
CN101
CN201
CN301
CN401
(COPY-1)
(COPY-2)
(COPY-3)
(COPY-4)


LINE/CONTROL IN
LINE/CONTROL OUT
To AU-171 P.C.B (CN1)
COPY2
To AU171 P.C.B (CN2)
COPY1
(CN-14 (S) BOARD)
[AC-3 BOARD]
EK MODEL
[AC-3 BOARD]
U MODEL
[AC-3 BOARD]
(CX-4 BOARD)
(SW-7 (S) BOARD)
(SW-3 (S) BOARD)
IC1, 2, 3, 4, 7 REGULATOR
Q1-Q4 SEL1121R
IC4 MS07G7-E425P CPU
IC5 PST52C RESET
IC6 RC7805FA REGULATION
IC7 RC7912A
IC8 NJM7812A
IC9 RC7912FA
IC10 RC7805FA
IC11 RC7805FA
P3₇ BUZZER
P3₆ SHUT OFF OUT
P3₅ ORG. P.B. IN
P3₄ A.REV IN
P3₃ REW IN
P3₂ COPY IN
P3₁ MEAD K1CIO
P4₇ MEAD SOLENOID1
P4₆ (T1 RTR OUT)
P5₅ (T1 FWD IN
P5₄ (T1 REV IN
P4₅ (S1 RTR OUT)
P0₅ (S1 FWD IN
P0₄ (S1 REV IN
P4₃ MEAD SOLENOID2
P4₂ (T2 RTR OUT)
P5₃ (T2 FWD IN
P5₂ (T2 REV IN
P4₁ (S2 RTR OUT)
P0₃ (S2 FWD IN
P0₂ (S2 REV IN
P4₀ MEAD SOLENOID3
P4₄ (T3 RTR OUT)
P5₁ (T3 FWD IN
P5₀ (T3 REV IN
P1₄ (BIAS 1)
P1₅ (BIAS 2)
P1₆ (BIAS 3)
P1₇ (BIAS 4)
P2₁ (A.COPY SW
P2₂ (COPY SW
P2₃ (STOP SW
P2₄ (REW SW
P2₀ M/S SEL
P2₅ SYNC)
P2₆ (A.REW FUNC)
COPY-1
COPY-2
COPY-3
COPY-4
CAPSTAN MOTOR
REEL MOTOR (COPY-1, COPY-3)
REEL MOTOR (COPY-2, COPY-4)
LED-5
to AU-171 P.C.B (CN-6) COPY1
to AU-171 P.C.B (CN-4) COPY2



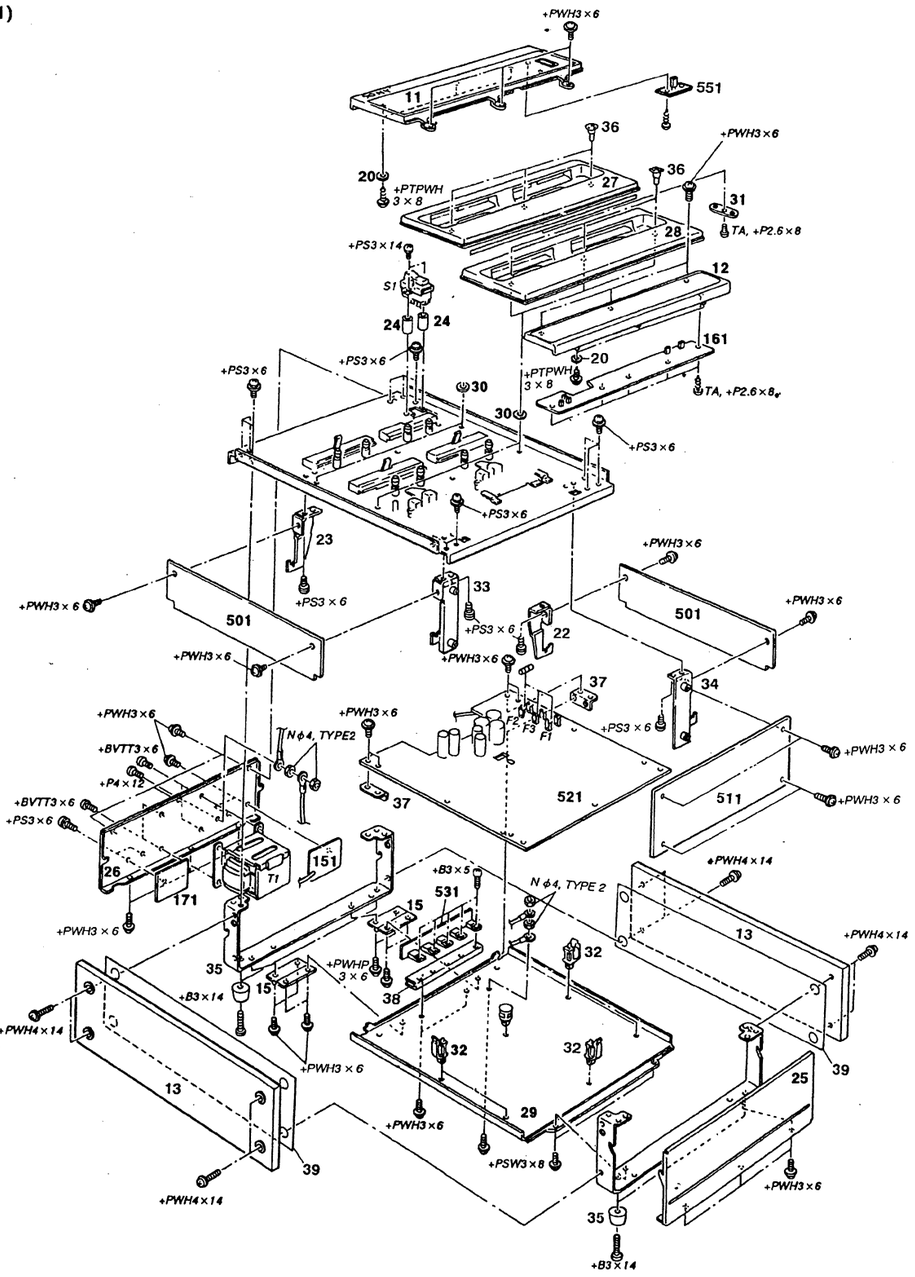
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8 W or less unless otherwise specified.
- ⊣W⊢ : fusible resistor.

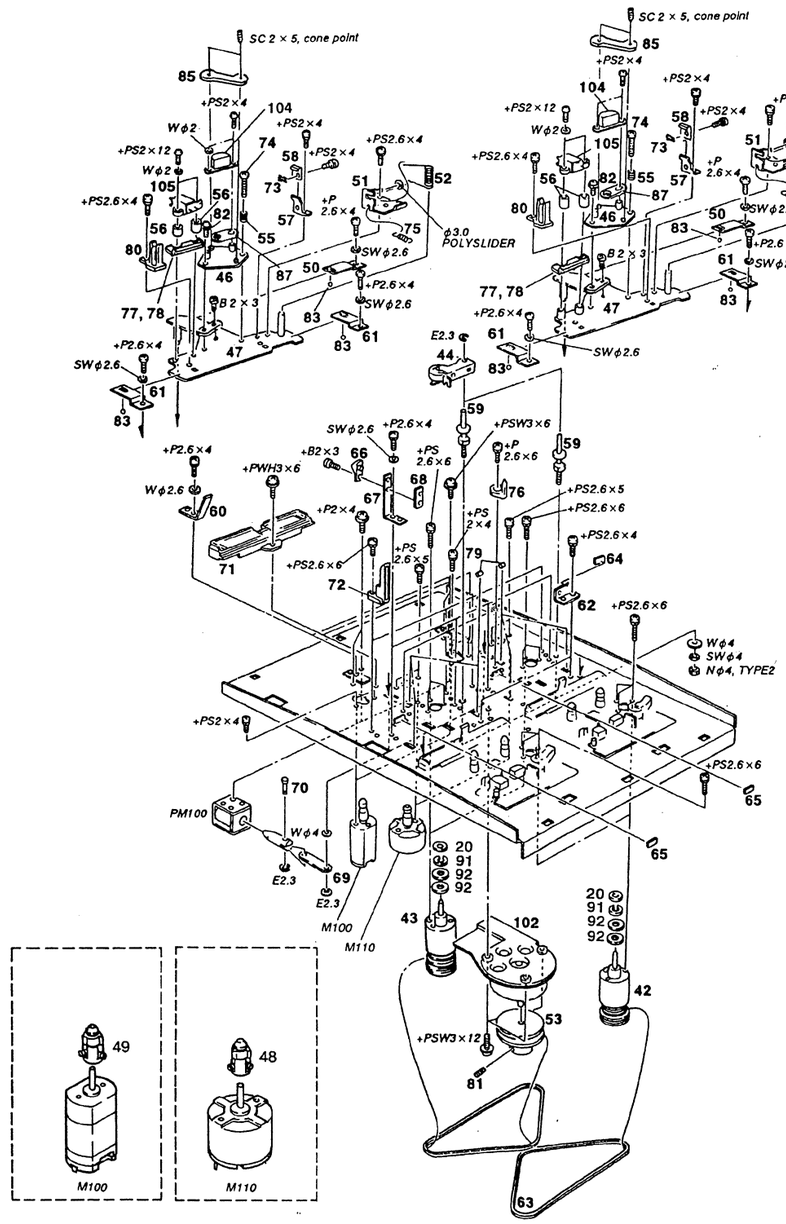
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 10
EXPLODED VIEWS

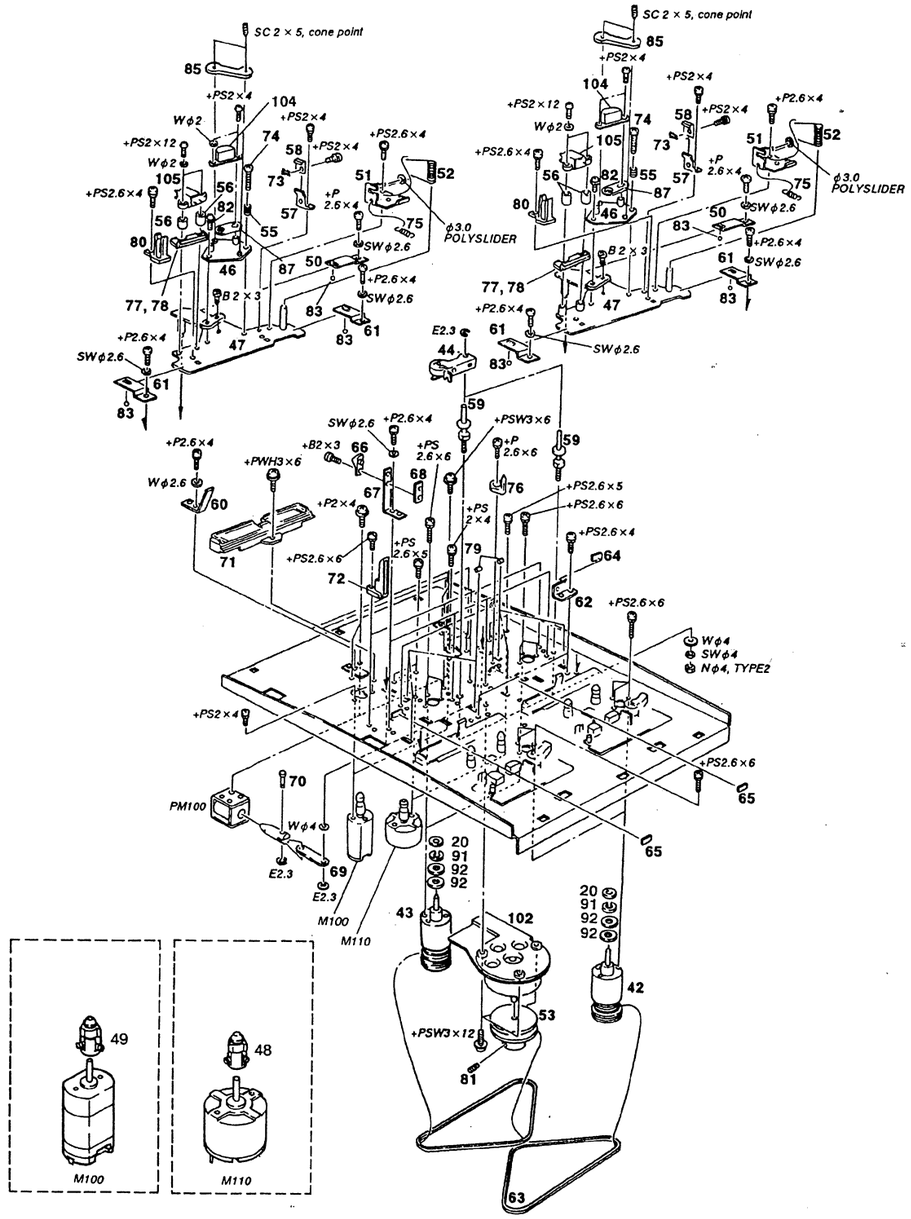
1)



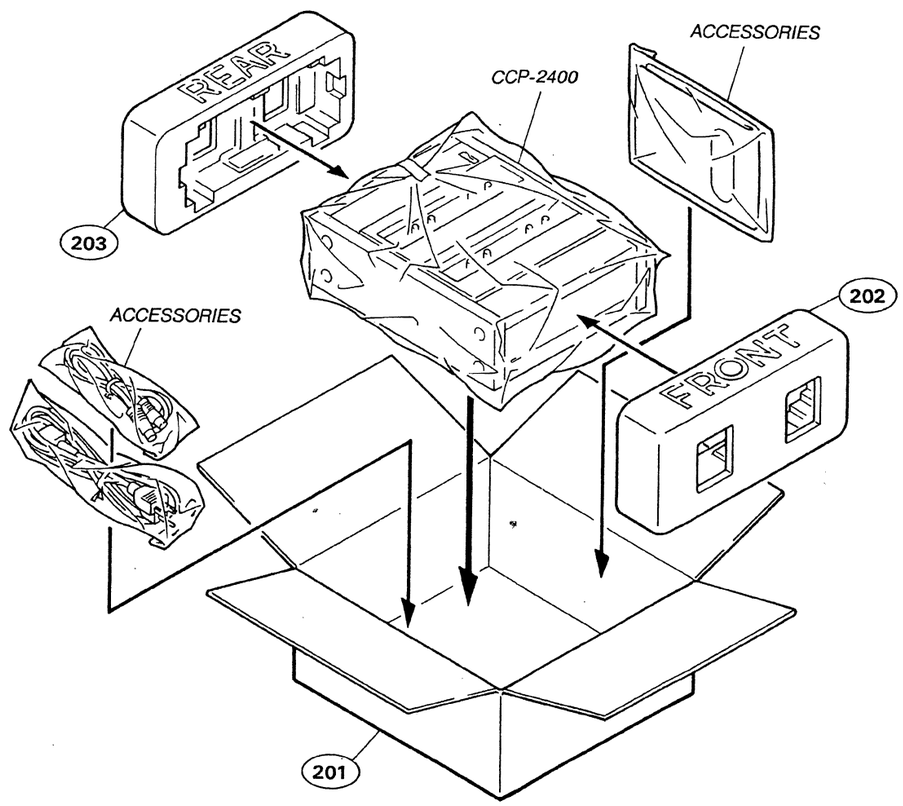
2)



2)


SC 2 × 5, cone point
85
+PS2×4
104
Wφ2
+PS2×12
74
58
73
105
56
82
55
57
51
52
+P 2.6×4
75
φ3.0 POLYSLIDER
SWφ2.6
80
46
87
50
B2×3
83
61
77, 78
47
+P2.6×4
44
E2.3
59
+PSW3×6
66
+PS 2.6×6
68
67
76
+PWH3×6
+P2.6×4
60
71
+PS2.6×5
+PS2.6×6
+PS 2×4
79
64
72
62
W φ4
SW φ4
N φ4, TYPE2
+PS2×4
70
PM100
W φ4
E2.3
69
65
20
91
92
M100
M110
43
102
42
53
+PSW3×12
81
63
49
48

3)


REAR
ACCESSORIES
CCP-2400
203
202
FRONT
201

1)

Ref. No. or Q'ty	Part No.	SP	Description
11	X-3166-712-1	o	PANEL ASSY, METER
12	X-3166-713-1	o	PANEL ASSY, SWITCH
13	X-3162-347-1	o	PLATE ASSY, SIDE
15	3-151-905-12	o	HINGE, DOOR
20	3-162-415-01	s	WASHER, THRUST
22	3-164-239-01	o	BRACKET (LEFT), PC BOARD
23	3-164-240-01	o	BRACKET (RIGHT), PC BOARD
24	3-164-242-01	o	SPACER, SWITCH
25	3-164-261-01	o	PANEL, FRONT
26	3-164-262-12	o	PANEL, REAR
27	3-164-265-21	o	PANEL, CASSETTE
28	3-164-265-31	o	PANEL, CASSETTE
29	3-164-266-01	o	PLATE, BOTTOM
30	3-564-027-01	o	FELT, LIMITER
31	3-668-743-00	o	NUT, PLATE, ROLLER, PRECEDING
32	3-682-047-01	o	HOLDER (A), PC BOARD
33	3-176-199-01	o	BRACKET (RIGHT), PC BOARD
34	3-176-200-01	o	BRACKET (LEFT), PC BOARD
35	X-4809-908-9	s	FOOT, RUBBER
36	3-694-825-11	s	SCREW (M3) (STEP),SPECIAL HEAD
37	3-164-251-01	o	SUPPORT, PC BOARD
38	3-164-252-01	o	HEAT SINK
39	3-170-051-01	o	PLATE, SHIELD

2)

Ref. No. or Q'ty	Part No.	SP	Description
42	A-2109-009-A	o	CAPSTAN (B) ASSY
43	A-2109-011-A	o	CAPSTAN (C) ASSY
44	X-3162-306-1	s	PINCH ROLLER ASSY
46	X-3162-343-1	o	PLATE ASSY, ADJUSTMENT, HEAD
47	X-3162-344-2	o	CHASSI (R) ASSY, HEAD
48	X-3162-348-1	o	TABLE (RIGHT) ASSY, REEL
49	X-3162-349-1	o	TABLE (LEFT) ASSY, REEL
50	3-162-312-01	o	SPRING
51	3-162-345-02	o	HOOK, SPRING
52	3-162-399-01	s	SPRING
53	3-164-221-01	s	PULLEY, MOTOR
55	3-164-232-01	s	SPRING, COMPRESSION
56	3-164-233-01	o	SPACER, ERASE HEAD
57	3-164-234-02	o	BRACKET, BRUSH
58	3-164-235-01	o	RETAINER, BRUSH
59	3-164-236-01	o	SHAFT, PINCH ROLLER
60	3-164-237-01	o	SPRING, CASSETTE RETAINER
61	3-164-238-01	o	RETAINER (B), HEAD CHASSIS
62	3-164-241-01	o	BRACKET, STOPPER
63	3-164-243-01	s	BELT, CAPSTAN
64	3-164-244-01	s	STOPPER, HEAD CHASSIS
65	3-164-245-01	s	CUSHION, CHASSIS
66	3-164-246-01	o	RETAINER, CASSETTE
67	3-164-247-01	s	SPRING, CASSETTE RETAINER
68	3-164-248-01	o	RETAINER, CASSETTE
69	3-164-249-01	o	PLATE, SOLENOID
70	3-164-250-01	o	SHAFT, JOINT
71	3-164-259-01	o	CASSETTE, RETAINER
72	3-164-271-01	s	GUIDE, CASSETTE
73	3-164-272-02	s	BRUSH,ELECTROSTATIC PREVENTION
74	3-418-191-00	s	SCREW
75	3-165-191-01	s	SPRING, TENSION
76	3-491-131-00	s	PIN, CASSETTE GUIDE
77	3-166-369-01	s	SPACER, HEAD
78	3-166-369-11	s	SPACER, HEAD
79	3-558-448-00	s	ROLLER, HEAD CHASSIS
80	3-576-837-00	s	CLAMP, LEAD
81	3-701-509-00	s	SET SCREW, DOUBLE CUP 3X8
82	3-162-424-01	s	SCREW(M2.6X6),(+) SPECIAL HEAD
83	7-671-154-01	o	STEEL, BALL
85	3-165-188-01	s	SPACER (1), ADJUSTMENT PLATE
87	3-165-189-01	s	SPACER (2), ADJUSTMENT PLATE
91	3-162-416-01	o	RING (SHAFT),RETAINING C
92	3-701-439-21	s	WASHER

3)

PACKING MATERIALS

Ref. No. or Q'ty	Part No.	SP	Description
201	3-176-137-11	o	INDIVIDUAL CARTON
202	3-164-215-01	o	CUSHION (FRONT)
203	3-164-216-01	o	CUSHION (REAR)

SUPPLIED ACCESSORIES

Ref. No. or Q'ty	Part No.	SP	Description
1set	X-3701-105-0	s	ROD ASSY, CLEANING, HEAD
1pc	⚠1-557-377-11	s	CORD, POWER
1pc	1-558-196-11	s	CORD, CONNECTION 13P
1pc	3-164-273-01	s	COVER, DUST
1pc	3-755-104-21	s	MANUAL, INSTRUCTION

SECTION 11
PARTS LIST

PARTS INFORMATION

(1) The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

(2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to improved parts and/or engineering changes or standardization of genuine parts.
This manual's exploded views and electrical spare parts list indicate the part numbers of the standardized genuine parts at the present.
Regarding engineering part changes by the engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with s in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with o will be processed, but allow for additional delivery time.

(4) Items with no part number and/or no description are not stocked because they are seldom required for routine service.

(5) All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

ELECTRICAL PARTS LIST

---
151 AC-3 BOARD

Ref. No.
or Q'ty Part No. SP Description

SAME AS CCP-2300

---
501 AU-171 BOARD

Ref. No.
or Q'ty Part No. SP Description

SAME AS CCP-2300

---
511 AU-172 BOARD

Ref. No.
or Q'ty Part No. SP Description

SAME AS CCP-2300

CN-14 (S) BOARD

Ref. No.
or Q'ty Part No. SP Description

171	1-634-869-11	o	PC BOARD, CN-14	
CN6	1-562-090-00	s	JACK 13P	
CN601	1-562-090-00	s	JACK 13P	

---
531 EX-4 BOARD

Ref. No.
or Q'ty Part No. SP Description

SAME AS CCP-2300

LED-5 BOARD

Ref. No.
or Q'ty Part No. SP Description

551	1-633-867-13	o	PC BOARD, LED-5	
D1	8-719-313-21	s	LED SEL1321G, GRN	

SY-3 (S) BOARD

Ref. No.
or Q'ty Part No. SP Description

521	A-2019-227-A	o	MOUNTED PWB, SY-3 (S)			
1pc	3-164-251-01	o	SUPPORT, PC BOARD			
1pc	7-682-903-11	s	SCREW +PWH 3X6			
1pc	3-164-252-01	o	HEAT SINK			
5pcs	7-682-547-09	s	SCREW +B 3X6			
6pcs	⚠1-533-189-11	s	HOLDER, FUSE			
C1	1-126-256-11	s	ELECT	4700uF	20%	35V
C2	1-126-256-11	s	ELECT	4700uF	20%	35V
C3	1-126-256-11	s	ELECT	4700uF	20%	35V
C4	1-124-360-00	s	ELECT	1000uF	20%	16V
C5	1-124-618-11	s	ELECT	2200uF	20%	35V
C6	1-124-618-11	s	ELECT	2200uF	20%	35V
C7	1-124-618-11	s	ELECT	2200uF	20%	35V
C8	1-124-477-11	s	ELECT	47uF	20%	25V
C9	1-124-477-11	s	ELECT	47uF	20%	25V
C10	1-124-477-11	s	ELECT	47uF	20%	25V
C11	1-124-477-11	s	ELECT	47uF	20%	25V
C12	1-124-477-11	s	ELECT	47uF	20%	25V
C13	1-161-057-00	s	CERAMIC	0.033uF	10%	50V
C14	1-102-962-00	s	CERAMIC	30PF	5%	50V
C15	1-102-962-00	s	CERAMIC	30PF	5%	50V
C16	1-124-477-11	s	ELECT	47uF	20%	25V
C17	1-124-477-11	s	ELECT	47uF	20%	25V
C18	1-124-477-11	s	ELECT	47uF	20%	25V
C19	1-124-477-11	s	ELECT	47uF	20%	25V
C20	1-124-477-11	s	ELECT	47uF	20%	25V
C21	1-161-057-00	s	CERAMIC	0.033uF	10%	50V
C22	1-124-618-11	s	ELECT	2200uF	20%	35V
C23	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C41	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C42	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C51	1-124-618-11	s	ELECT	2200uF	20%	35V
C52	1-124-360-00	s	ELECT	1000uF	20%	16V
C61	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C62	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C101	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C102	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C103	1-124-471-00	s	ELECT	1000uF	20%	6.3V
C201	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C202	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C203	1-124-471-00	s	ELECT	1000uF	20%	6.3V
C301	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C302	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C303	1-124-471-00	s	ELECT	1000uF	20%	6.3V
C401	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C402	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C403	1-124-471-00	s	ELECT	1000uF	20%	6.3V
CF1	1-567-875-11	s	VIBRATOR, CERAMIC			
CN1	1-564-242-00	o	PIN, CONNECTOR 5P			
CN2	1-508-736-00	o	PIN, CONNECTOR 10P			
CN4	1-564-320-00	s	PIN, CONNECTOR (B2P-VH) 2P			
CN6	1-560-470-00	o	PIN, CONNECTOR 8P			
CN101	1-560-469-00	o	PIN, CONNECTOR 6P			
CN201	1-560-469-00	o	PIN, CONNECTOR 6P			
CN301	1-560-469-00	o	PIN, CONNECTOR 6P			
CN401	1-560-469-00	o	PIN, CONNECTOR 6P			
CN602	1-560-456-00	o	PIN, CONNECTOR 2P			

(SY-3 (S) BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
D1	8-719-505-60	s	DIODE S5VB20
D2	8-719-505-60	s	DIODE S5VB20
D3	8-719-200-02	s	DIODE 10E2
D4	8-719-200-02	s	DIODE 10E2
D5	8-719-911-19	s	DIODE 1SS119
D6	8-719-911-19	s	DIODE 1SS119
D7	8-719-200-02	s	DIODE 10E2
D101	8-719-200-02	s	DIODE 10E2
D102	8-719-911-19	s	DIODE 1SS119
D103	8-719-911-19	s	DIODE 1SS119
D104	8-719-911-19	s	DIODE 1SS119
D201	8-719-200-02	s	DIODE 10E2
D202	8-719-911-19	s	DIODE 1SS119
D203	8-719-911-19	s	DIODE 1SS119
D204	8-719-911-19	s	DIODE 1SS119
D301	8-719-200-02	s	DIODE 10E2
D302	8-719-911-19	s	DIODE 1SS119
D303	8-719-911-19	s	DIODE 1SS119
D304	8-719-911-19	s	DIODE 1SS119
D401	8-719-200-02	s	DIODE 10E2
D402	8-719-911-19	s	DIODE 1SS119
D403	8-719-911-19	s	DIODE 1SS119
D404	8-719-911-19	s	DIODE 1SS119
D601	8-719-911-19	s	DIODE 1SS119
D602	8-719-911-19	s	DIODE 1SS119
F1	⚠1-532-745-11	s	FUSE 3.15A 125V
F2	⚠1-532-744-11	s	FUSE, GLASS TUBE
F3	⚠1-532-744-11	s	FUSE, GLASS TUBE
IC5	8-759-913-42	s	IC PST520C-2
IC6	8-759-635-02	s	IC M50747SP-C42SP
IC8	8-759-701-75	s	NJM7805FA
IC101	8-759-984-03	s	IC LM339N
IC201	8-759-984-03	s	IC LM339N
IC301	8-759-984-03	s	IC LM339N
IC401	8-759-984-03	s	IC LM339N
PS1	⚠1-532-679-21	s	LINK, IC
PS2	⚠1-532-679-21	s	LINK, IC
Q1	8-729-900-80	s	TRANSISTOR DTC114ES
Q2	8-729-199-82	s	TRANSISTOR 2SD998
Q4	8-729-900-80	s	TRANSISTOR DTC114ES
Q5	8-729-900-80	s	TRANSISTOR DTC114ES
Q6	8-729-900-80	s	TRANSISTOR DTC114ES
Q102	8-729-140-93	s	TRANSISTOR 2SB733-3
Q103	8-729-900-61	s	TRANSISTOR DTA114ES
Q104	8-729-900-61	s	TRANSISTOR DTA114ES
Q112	8-729-140-93	s	TRANSISTOR 2SB733-3
Q113	8-729-900-61	s	TRANSISTOR DTA114ES
Q114	8-729-900-61	s	TRANSISTOR DTA114ES
Q121	8-729-900-61	s	TRANSISTOR DTA114ES
Q122	8-729-140-96	s	TRANSISTOR 2SD774-4
Q123	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q202	8-729-140-93	s	TRANSISTOR 2SB733-3
Q203	8-729-900-61	s	TRANSISTOR DTA114ES
Q204	8-729-900-61	s	TRANSISTOR DTA114ES
Q212	8-729-140-93	s	TRANSISTOR 2SB733-3
Q213	8-729-900-61	s	TRANSISTOR DTA114ES
Q214	8-729-900-61	s	TRANSISTOR DTA114ES

(SY-3 (S) BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
Q221	8-729-900-61	s	TRANSISTOR DTA114ES
Q222	8-729-140-96	s	TRANSISTOR 2SD774-4
Q223	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q302	8-729-140-93	s	TRANSISTOR 2SB733-3
Q303	8-729-900-61	s	TRANSISTOR DTA114ES
Q304	8-729-900-61	s	TRANSISTOR DTA114ES
Q312	8-729-140-93	s	TRANSISTOR 2SB733-3
Q313	8-729-900-61	s	TRANSISTOR DTA114ES
Q314	8-729-900-61	s	TRANSISTOR DTA114ES
Q321	8-729-900-61	s	TRANSISTOR DTA114ES
Q322	8-729-140-96	s	TRANSISTOR 2SD774-4
Q323	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q402	8-729-140-93	s	TRANSISTOR 2SB733-3
Q403	8-729-900-61	s	TRANSISTOR DTA114ES
Q404	8-729-900-61	s	TRANSISTOR DTA114ES
Q412	8-729-140-93	s	TRANSISTOR 2SB733-3
Q413	8-729-900-61	s	TRANSISTOR DTA114ES
Q414	8-729-900-61	s	TRANSISTOR DTA114ES
Q421	8-729-900-61	s	TRANSISTOR DTA114ES
Q422	8-729-140-96	s	TRANSISTOR 2SD774-4
Q423	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q601	8-729-900-61	s	TRANSISTOR DTA114ES
Q602	8-729-900-80	s	TRANSISTOR DTC114ES
Q603	8-729-900-80	s	TRANSISTOR DTC114ES
Q604	8-729-900-80	s	TRANSISTOR DTC114ES
Q605	8-729-900-80	s	TRANSISTOR DTC114ES
Q606	8-729-900-80	s	TRANSISTOR DTC114ES
R1	1-249-441-11	s	CARBON 100K 5% 1/4W
R2	1-249-416-11	s	CARBON 820 5% 1/4W
R3	1-249-416-11	s	CARBON 820 5% 1/4W
R4	1-249-441-11	s	CARBON 100K 5% 1/4W
R5	1-249-429-11	s	CARBON 10K 5% 1/4W
R6	1-249-401-11	s	CARBON 47 5% 1/4W
R7	1-247-903-00	s	CARBON 1M 5% 1/4W
R8	1-249-429-11	s	CARBON 10K 5% 1/4W
R17	1-249-416-11	s	CARBON 820 5% 1/4W
R18	1-249-416-11	s	CARBON 820 5% 1/4W
R19	1-249-416-11	s	CARBON 820 5% 1/4W
R22	1-249-441-11	s	CARBON 100K 5% 1/4W
R102	1-249-417-11	s	CARBON 1K 5% 1/4W
R104	1-249-429-11	s	CARBON 10K 5% 1/4W
R105	1-249-396-11	s	CARBON 18 5% 1/4W
R112	1-249-417-11	s	CARBON 1K 5% 1/4W
R114	1-249-429-11	s	CARBON 10K 5% 1/4W
R115	1-249-416-11	s	CARBON 820 5% 1/4W
R116	1-249-429-11	s	CARBON 10K 5% 1/4W
R117	1-249-401-11	s	CARBON 47 5% 1/4W
R122	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R202	1-249-417-11	s	CARBON 1K 5% 1/4W
R204	1-249-429-11	s	CARBON 10K 5% 1/4W
R205	1-249-396-11	s	CARBON 18 5% 1/4W
R212	1-249-417-11	s	CARBON 1K 5% 1/4W
R214	1-249-429-11	s	CARBON 10K 5% 1/4W
R215	1-249-416-11	s	CARBON 820 5% 1/4W
R216	1-249-429-11	s	CARBON 10K 5% 1/4W
R217	1-249-401-11	s	CARBON 47 5% 1/4W
R222	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R302	1-249-417-11	s	CARBON 1K 5% 1/4W

SONY

AUDIO CASSETTE DUPLICATOR

CCP-2300
CCP-2400

SERVICE MANUAL

SUPPLEMENT-1

Please add and replace your manual with this SUPPLEMENT-1.

CCP-2300 (U, EK)
CCP-2400 (U, EK)
9-955-113-81

Sony Corporation
B&I Systems Company

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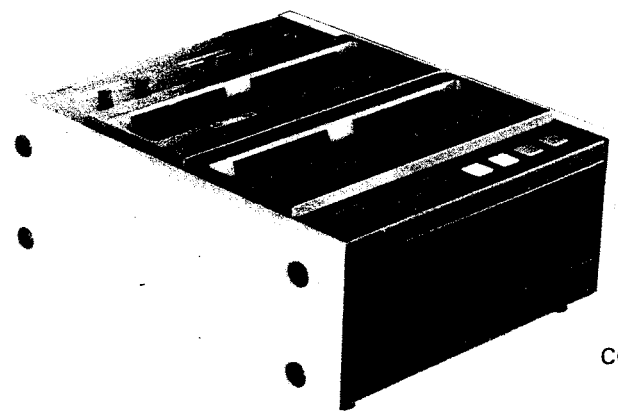
SONY

AUDIO CASSETTE DUPLICATOR

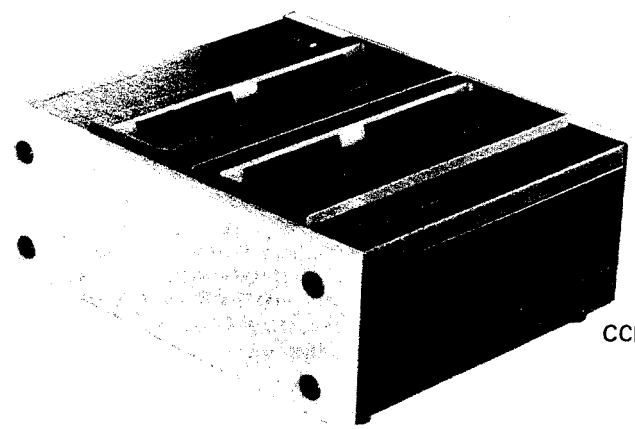
CCP-2300

CCP-2400

SERVICE MANUAL



CCP-2300



CCP-2400

SPECIFICATIONS

Power requirements	U model : 120 V AC, 60 Hz EK model : 230 V AC, 50/60 Hz
Power consumption	U model : 0.74 A EK model : 67 W
Recording system	4-track 4-channel /4-track 2-channel
Tape cassette	Normal TYPE I cassette (C-30, C-46, C-60, C-90) (TYPE II and TYPE IV tapes not usable)
Tape speed	76 cm/s (30 ips)
Copy time	Approx. 2 min. (with C-60 cassette) (per run)
Rewind time	Approx. 45 sec. (with C-60 cassette)
Frequency response	40 – 12,500 Hz
Recording bias frequency	Approx. 600 kHz
Signal to noise ratio	50 dB, Peak level recording (NAB-A, WRMS)
Total harmonic distortion	Within 3%
Wow and flutter	Less than 0.23% (WRMS)
Crosstalk	Better than 52 dB (between track 2 and 3, at 1 kHz)
Drive control connector	CCP-2300: Output (13-pin DIN) CCP-2400: Input (13-pin DIN), Output (13-pin DIN)
Dimensions	Approx. 328 × 160 × 382mm (w/h/d) ($13 \times 6\ ^3/_8 \times 15\ ^1/_8$ inches) not including projecting parts and controls
Mass	Approx. 10.2 kg (22 lb 8 oz)
Accessories supplied	AC power cord (1) Head cleaning tip (1 set) Dust cover (1) Control cable with 13-pin DIN connectors (1, supplied with the CCP-2400 only) Operating Instructions

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

2-2. CAPSTAN ASSEMBLY

The unit employs 4 sets of capstan assemblies to drive a capstan motor using 2 capstan belts.
Figure 1 shows a layout of capstan assemblies and capstan motor as viewed from rear side of chassis with the bottom plate removed.

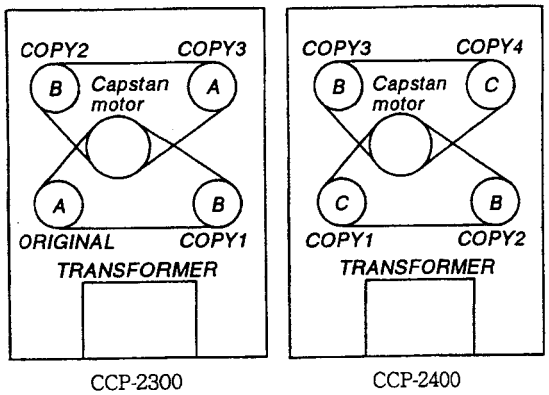


Figure 1

2-2-1. Speed Lag between Original MD and Copy MD

In the CCP-2300/2400, the speed in the copy MD is slower by 1% than that in the original MD in order to prevent an unrecorded portion that will otherwise be present due to the fact that the copy tape is rewounded faster than original tape.
This speed lag is done with difference in diameter of flywheels.

2-2-2. Kind and Arrangement of Capstan Assemblies

The kind and combination of capstan assemblies are as shown in Figure 1 and Table 1 ; a total of three kinds are available in the CCP-2300/2400.

MD CCP-2300 /CCP-2400	CCP-2300	CCP-2400
ORIGINAL /COPY1	A-2109-010-A Capstan (A) Assy	A-2109-011-A Capstan (C) Assy
COPY1 /COPY2	A-2109-009-A Capstan (B) Assy	A-2109-009-A Capstan (B) Assy
COPY2 /COPY3	A-2109-009-A Capstan (B) Assy	A-2109-009-A Capstan (B) Assy
COPY3 /COPY4	A-2109-010-A Capstan (A) Assy	A-2109-011-A Capstan (C) Assy

Table 1

2-2-3. Identification and Dimension of Capstan Assemblies

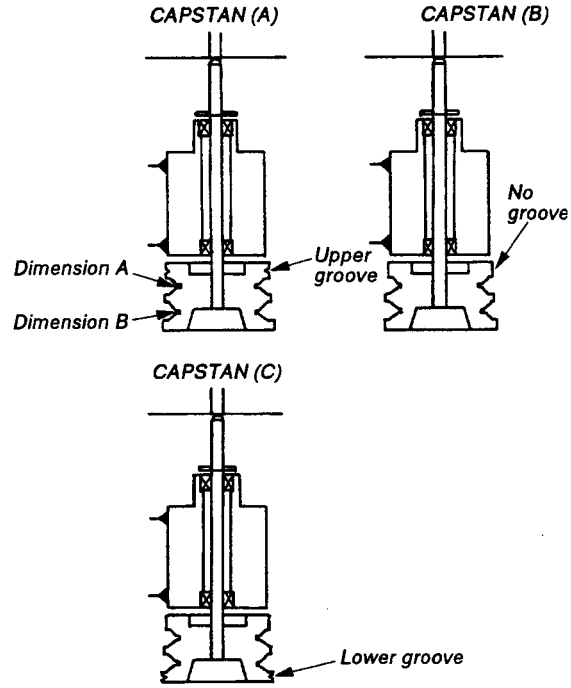


Figure 2

Identification of capstan assemblies :
1. Capstan (A) assembly···Upper groove in flywheel
2. Capstan (B) assembly···No groove
3. Capstan (C) assembly···Lower groove in flywheel

Flywheel inner diameter :

	Capstan (A) Assy	Capstan (B) Assy	Capstan (C) Assy
Dimension A	19.87	20.00	20.07
Dimension B	20.07	20.00	20.07

Note : Replace the capstan assembly with the same kind of capstan assembly when replacement is necessary.
Also, engage the belt at the same position otherwise the speed will change.

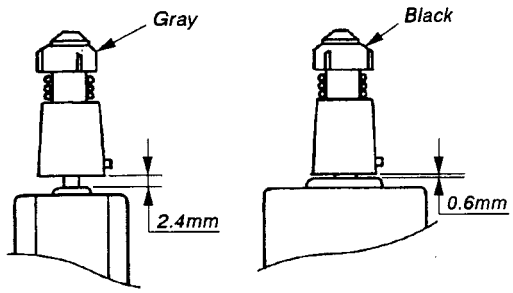
2-2-4. When Eliminating Speed Lag between Original and Copy

To make a tape without speed lag, the CCP-2300 must be modified since there is a 1% speed lag between original MD and copy MD in the CCP-2300/2400. Modification is made by replacing the capstan (A) Assy used for original MD in the CCP-2300 with capstan (C) Assy.

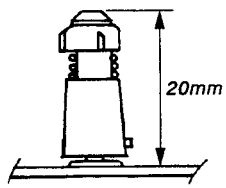
2-3. REEL HEAD ASSEMBLY POSITION

There are two methods available for replacing the reel head.

1) When reel head assembly is mounted on the stand alone motor (in case of motor change, etc.)
   Relative position between reel head and stand alone motor is A and B in Figure 3.



A : Reel head (L) Assy B : Reel head (R) Assy



C : Height from chassis

Figure 3

2) Positioning from chassis (if motor is attached to chassis)
   The distance from chassis to real head top is 20mm as shown Figure 3C.

Notes : 1. After replacement, confirm that the motor does not contact the reel head assembly.
2. Tighten the reel head assembly fixing screws (hex. socket head setscrew 2 × 3) with a hex. key wrench.
3. The left motor shaft is locally planed, and one of two setscrews should be positioned here.

2-4. ASSEMBLY OF CAPSTAN MOTOR AND MOTOR PULLEY

Insert slowly the motor pulley into the capstan motor shaft, and tighten hexagonal socket head screw where the pully is stopped.
Relative position between capstan motor and pulley is as shown in Figure 4.

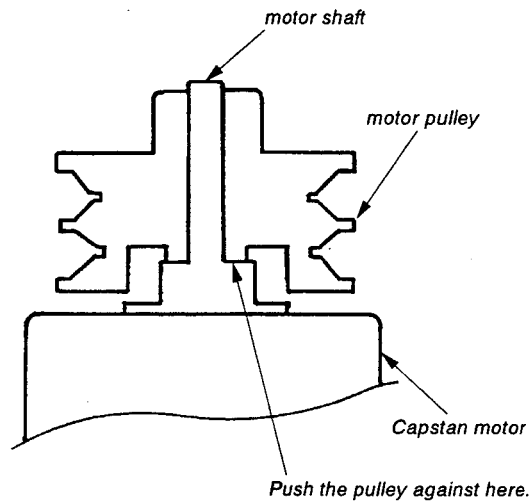
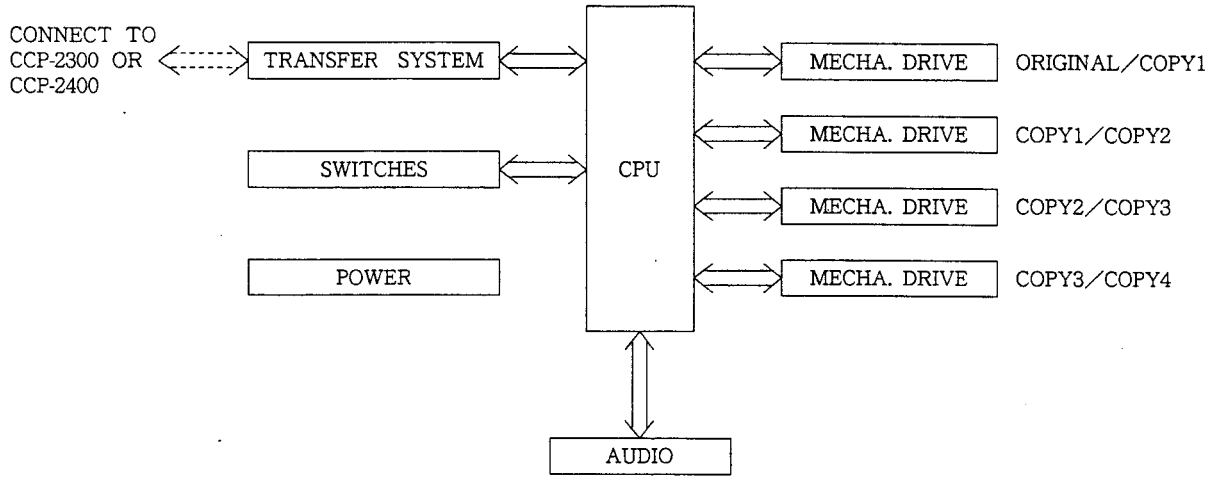


Figure 4

2-5. ELECTRICAL CIRCUIT

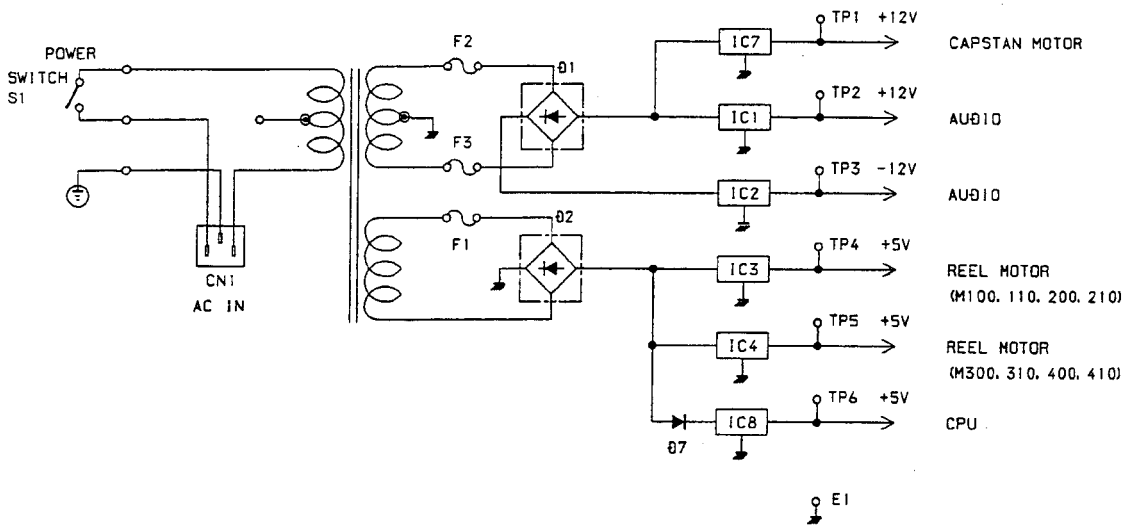
2-5-1. System block:

The circuits of the CCP-2300/2400 consist of each block as shown below.



2-5-2. Power supply:

Six 3-pin regulators are used, as shown below.



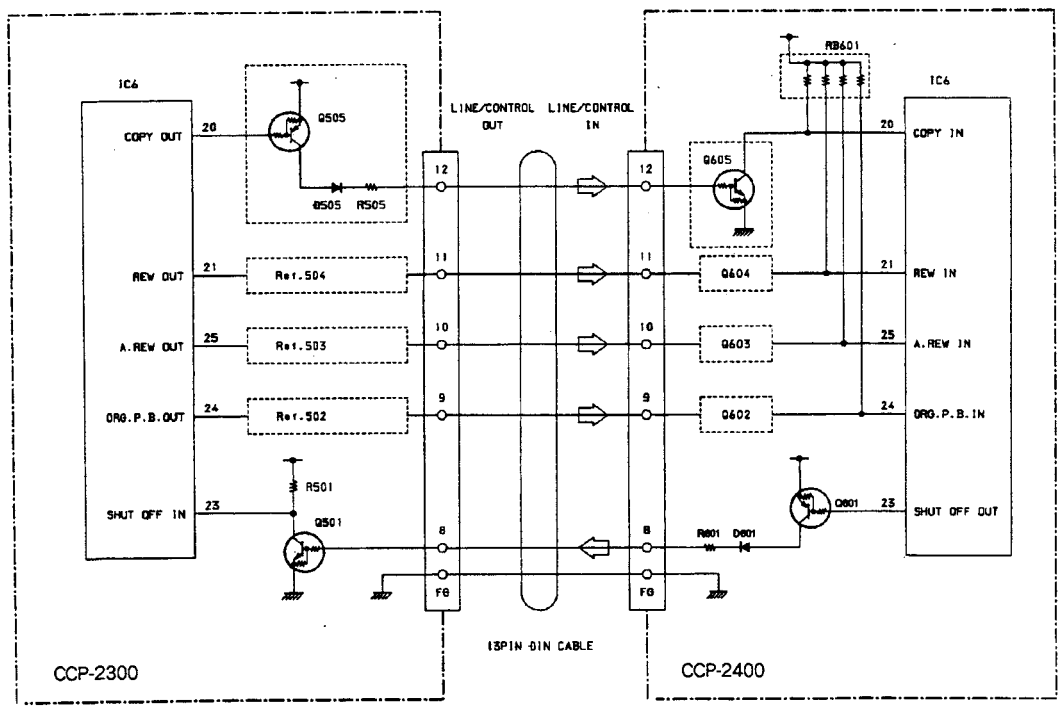
2-5-3. Mecha. drive:

Each reel motor is linked to the CPU with two input signals (FWD IN, REW IN) and one output signal (MTR OUT).
With the input signals, the CPU judges the motor status (run or stop)
With the output signal, the CPU controls the motor rotation.
The control ports for reel motor are as listed below.
IC6 (CPU)

CPU PORT		IC6 (CPU) Pin No.				Operation		
		MD1	MD2	MD3	MD4	STOP	COPY	REW
OUTPUT	T MTR OUT	13	12	11	10	H	L	H
	S MTR OUT	17	16	15	14	H	H	L
INPUT	T FWD IN	40	39	38	37	L	H	L
	T REV IN	36	35	34	33	L	L	H
	S FWD IN	56	55	54	53	L	L	H
	S REV IN	52	51	50	49	L	H	L

2-5-4. Transfer system:

The digital signal system in the CCP-2300/2400 consists of three operation signal lines and two status signal lines. If plural units of CCP-2400 are connected, they are connected in parallel as viewed from the CCP-2300 side.



Operation signals.

13PIN CONNECTOR	STOP	COPY	REW	*A.REW
12	L	H	L	L
11	L	L	H	L
10	L	L	L	H

L : If CCP-2400 is not connected,"L" is "OPEN".

* A. REW : Only the tape for which the SHORT TAPE indicator does not illuminate is rewound.
In the AUTO COPY mode, REW→ COPY→A. REW are output.

Status signal (from CCP-2300 to CCP-2400)

13PIN CONNECTOR	Playback of original tape	others
9	H	L

Status signal (from CCP-2400 to CCP-2300)

13PIN CONNECTOR	Even one MD in CCP-2400 is running	All MDs in CCP-2400 stop
8	H	L

2-5-5. Switches:

Four switches are provided each for CCP-2300 and 2400. (For the CCP-2400, S601 – S604 on the right side of SY-3 board in the set.) The SIDE SELECT switch signal is not input to the CPU but it operates directly the relays on the audio board.
The set provides two special modes for service (cleaning mode and service mode), and these modes can be activated by the switch operation.

SECTION 3
SERVICE INFORMATION

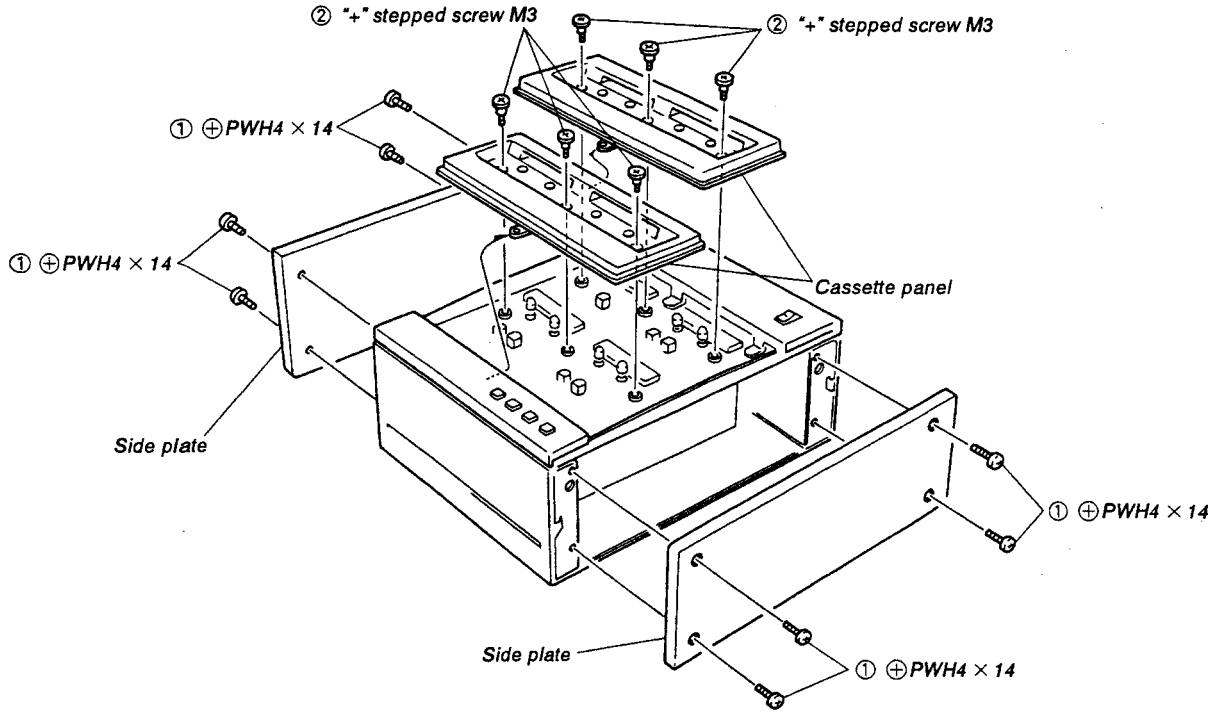
3-1. DISASSEMBLY

[Side plate]

① Remove screws (4 pcs each).

[Cassette panel]

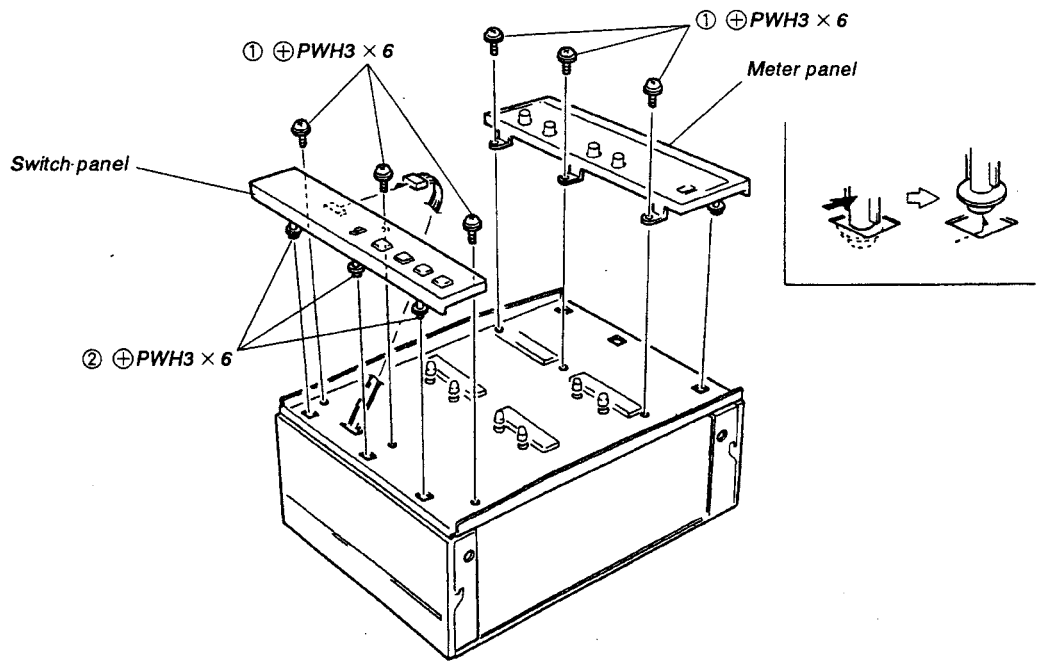
② Remove screws (3 pcs each). Note that a protruded hook is attached to each panel.



[Meter Panel] [Switch panel]

① Remove screws (3 pcs each).

② Disengage hooks (3 places each) of chassis.

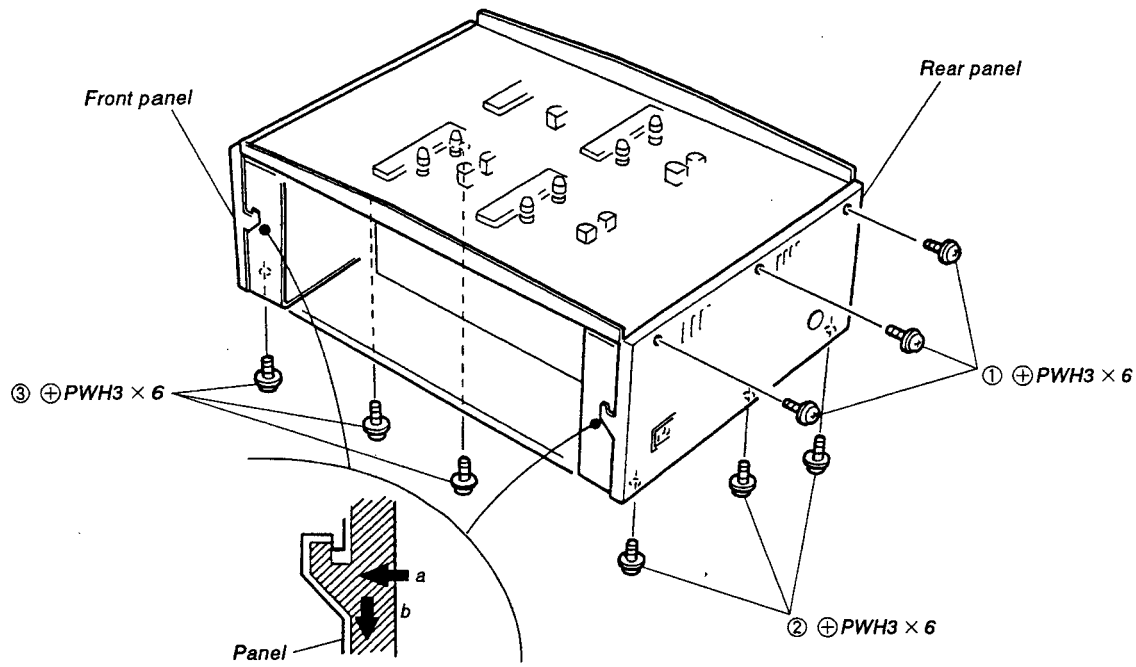


[Rear panel]

①, ② Remove screws (total 6 pcs).
Pushing the panel in direction "a", disengage the hook toward the direction "b".

[Front panel]

③ Remove screws (total 3 pcs).
Pushing the panel in direction "a", disengage the hook toward the direction "b".

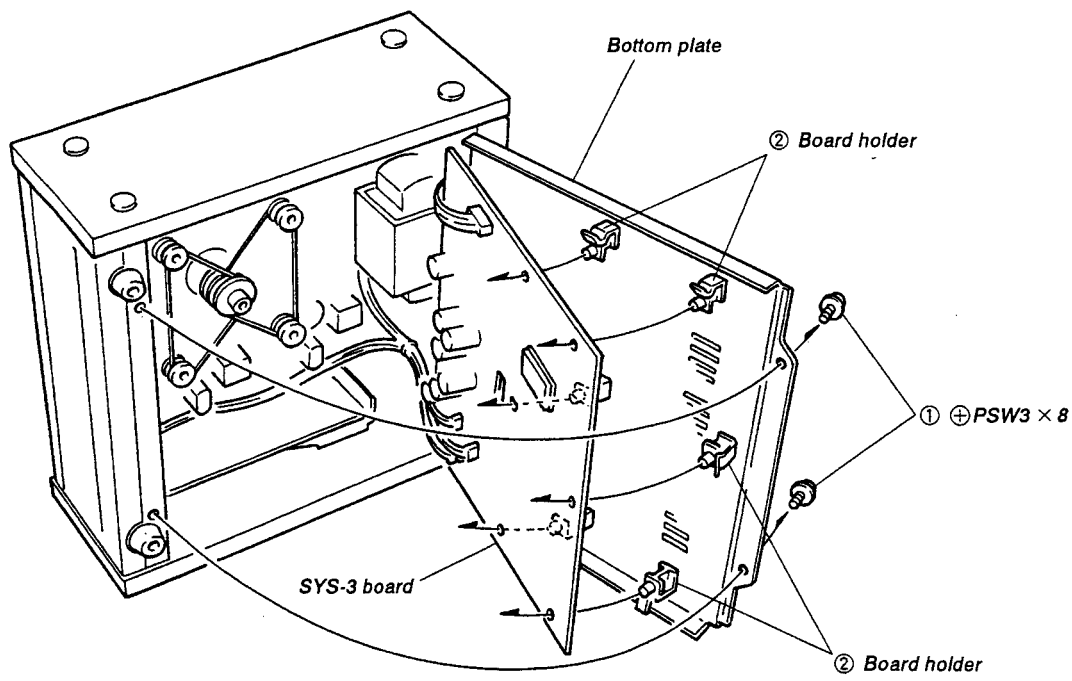


[Bottom plate]

① Remove screws (2 pcs), and the bottom plate will open together with the SY-3 board.

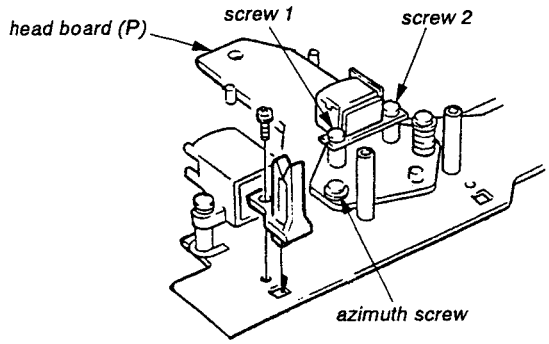
[SY-3 board]

② Remove the board holders (6 places), and the SY-3 board will open.



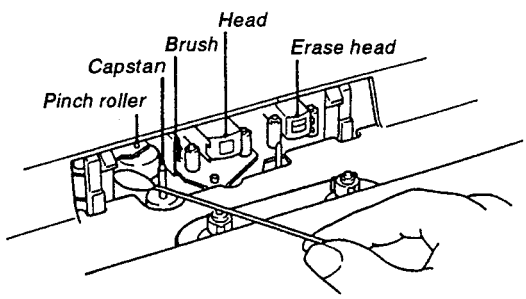
3-2. HEAD REPLACEMENT

1. Disconnect the lead wires of head at the solder part.
2. Remove the head fixing screws. (For screw 1, only loosen it.)
3. Install a new head with screws 1 and 2.
4. After installation, adjust height and azimuth of the head.



The set provides a cleaning mode and a service mode to facilitate the maintenance. Operate it in the procedure below.

3-3. CLEANING MODE



The head block will come out so that the head and pinch roller can easily be cleaned.

Operating method

CCP-2300

Take out the cassette. Turn on the POWER switch while pressing the COPY button, and the head block will come out in about 4 seconds. The head block returns automatically after 5 munits, however, the cleaning mode cannot be reset unless other than COPY button is pressed.

CCP-2400

Connect the CCP-2400 to the CCP-2300, turn on the POWER switch with the CCP-2300 in the cleaning mode, and the cleaning mode is then activated.

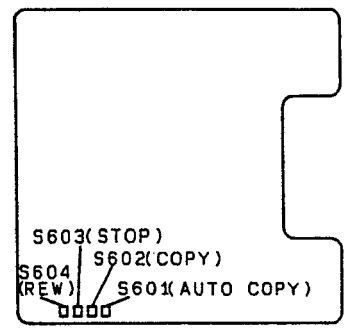
If the CCP-2400 alone is operated, turn on the POWER switch while pressing the COPY button (S602) inside the set, and the cleaning mode will be activated in about 4 seconds.(At this time, NEVER connect the CONTROL CABLE.)

After that, if the cleaning mode is reset by pressing other than COPY button, the CCP-2400 can be operated in the same manner as CCP-2300 by using the S601 – 604 switches.

However, the CCP-2400 cannot output signals to the transfer system.

For normal operation (linking with CCP-2300), turn off the POWER switch once.

SY-3 BOARD COMPONENT SIDE



3-4. SERVICE MODE

This mode facilitates adjustment of reel motor speed and head azimuth.

Operating method

The CCP-2300 and CCP-2400 can be operated in the same method.

1) Turn on the POWER switch while pressing the REW and AUTO COPY buttons.
2) Keep pressing both buttons, and when the SHORT TAPE indicator goes off after about 4 seconds, release the AUTO COPY button. (At this time, do not release the REW button.)
3) Further after 2 seconds, make sure that the SHORT TAPE indicator comes on again and the service mode is activated, then release the REW button.

The following operation is available.

AUTO COPY : Same status as the COPY, with exception that the bias does not rise up. Accodingly, the azimuth can easily be checked when the record head is connected directly to the playback amplifier.

COPY : The COPY status is maintained, so that the take up reel and plunger circuits can be checked.

REW : The REWIND status is maintained, so that the supply reel circuit can be checked.

Note : In the COPY and REWIND modes, the shutoff and brake circuits do not function. Therefore, never insert a cassette. If a cassette is inserted, the real motor can be damaged at the end of tape.

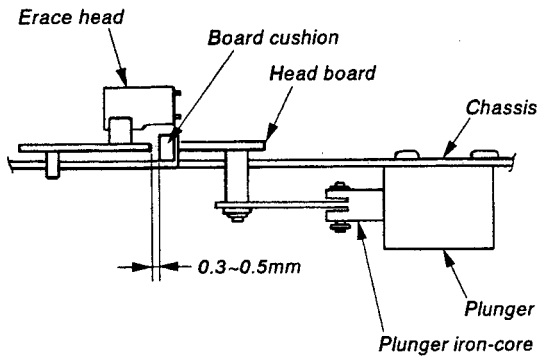
[Test tape]

Type	Part No.	Signal	
		Frequency (Hz)	Level (dB)
P-4-L300	7-819-011-11	315	0
P-4-A063	7-819-014-11	6.3 k	– 10
P-4-A100	7-819-016-11	10 k	– 10
WS-48A	7-819-032-11	3 k	0
CQ-012C	8-909-708-02	Mirror, 12 μ base	
CQ-201B	8-909-708-41	Torque	

SECTION 4
ADJUSTMENT

4-1. ADJUSTMENT OF PLUNGER STROKE

The plunger stroke must be adjusted to determine the head advance amount, when the plunger is replaced.



Replacement and Adjustment :

1. Removing the cassette retainer (3-164-259-01) on the front side of chassis will expose the plunger fixing screws (PSW 3 × 6).
2. Replace the plunger, fix it temporarily to the chassis, and link it to the head board.
3. Push in the plunger iron-core until it contacts closely the plunger main body, so that the head board advances.
4. Fix the plunger at the position where a clearance between head board and board cushion (3-146-245-01) bonded to the notch in the chassis is 0.3 to 0.5 mm.

Note : After replacement, confirm in the copy satatus (service mode or cleaning mode) that the clearance of 0.3~0.5mm is ensured.

4-2. REPLACEMENT OF ELECTROSTATIC BRUSH

An electrostatic brush is attached to the head board to eliminate static discharge. It comes in contact with the tape when the head board advances. Therefore, it wears.

Follow the procedure provided below when replacing the brush.

1) Remove the electrostatic brush assembly (PS 2 × 4) on the head board, then peel the brush off the brush bracket (3-164-234-02).
2) Clean the brush bracket with alcohol, and bond a new brush.
3) The electrostatic brush position is as shown in Figure 1.

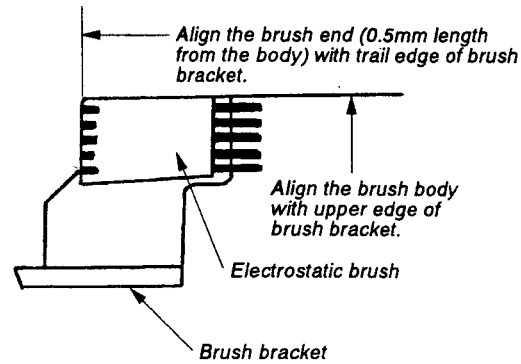
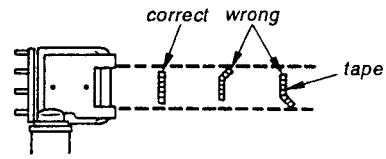

Align the brush end (0.5mm length from the body) with trail edge of brush bracket.
Align the brush body with upper edge of brush bracket.
Electrostatic brush
Brush bracket

Figure 1

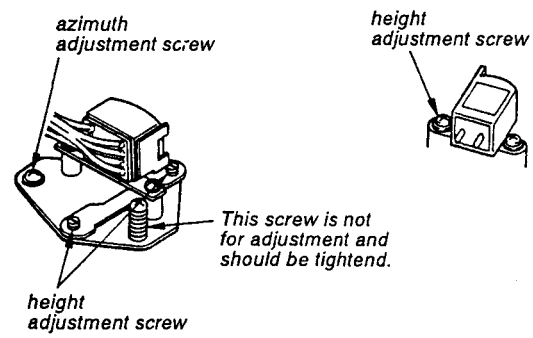
Note : The brushes are made of thin stainless wires. Take care not to bend them during replacement.

4-3. HEAD HEIGHIT ADJUSTMENT

1. Install a mirror tape cassette (CQ-012C) and depress COPY button and STOP button alternately and watch the tape at tape guide.
2. In COPY mode, if tape is curled along tape guide, adjust the respective adjustment parts shown below.



Record and Playback Head : Guide Head :


azimuth adjustment screw
height adjustment screw
This screw is not for adjustment and should be tightend.
height adjustment screw

Note : Also pay attention to head azimuth and zenith, and execute visual confirmation.
For this, turn the front and back height adjustment screws and the vertical adjustment screw each for about the same amount.

4-4. HEAD AZIMUTH ADJUSTMENT

Select either of the following three methods.

A. When the playback amplifier (AU-198) in CCP-2300 is used.
B. There is no CCP-2300.
C. When the level meter on the CCP-2300 is used.

Note : Don't press the COPY, REWIND button in service mode when insert the cassette tape. Using the Head demagnetizer, demagnetize the head and clean the pinch roller and head.

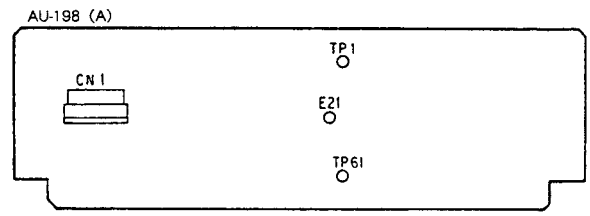
A. When the playback amplifier (AU-198) in CCP-2300 is used.

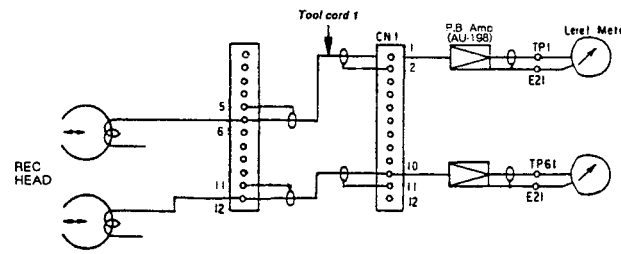
Test Equipment : Tool Cord 1
Test Tape (P-4-A100)
Level Meter
CCP-2300

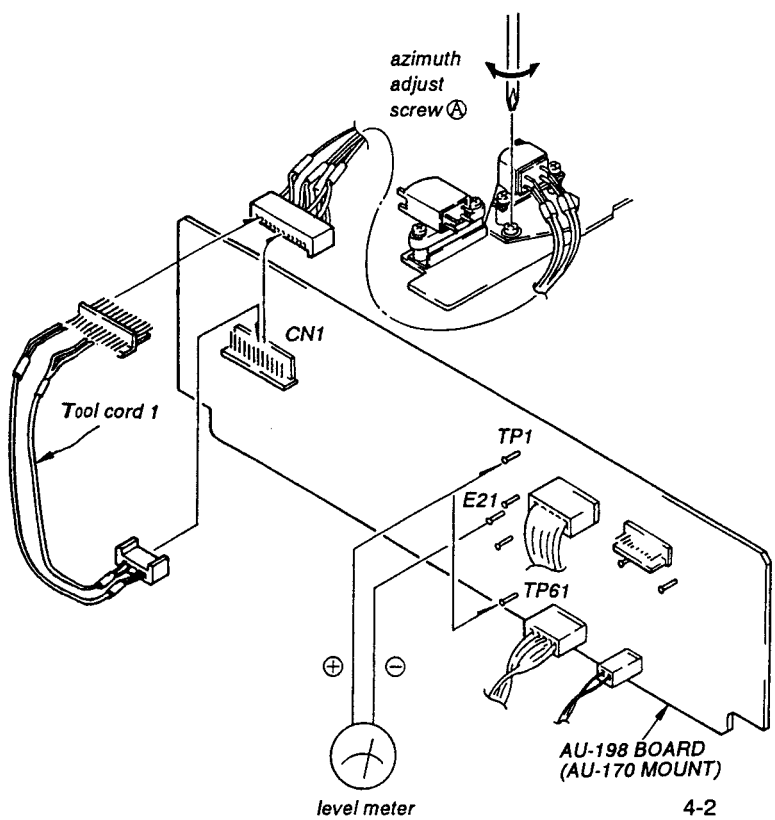
Procedure:

* 1. Disconnect the connector CN1 from the original head (playback) on the AU-198.
* 2. Connect the connector on the head to be adjusted to the tool cord 1, then connect another end to the connector CN1 on the AU-198 board.
3. Connect a "+" terminal of level meter to TP1 or TP61 on the AU-198 board, and "−" terminal of level meter to E21 on the AU-198 board.
4. Insert the test tape (P-4-A100) into the deck to be adjusted.
5. Activate the service mode, press the AUTO COPY button to activate the playback status.
6. Adjust the azimuth adjust screw Ⓐ so that reading of both level meters output level (TP1 and TP61) become the maximum.

Note : The items marked * are not necessary for P. B. head adjustment.







AU-172 BOARD

Ref. No. or Q'ty	Part No.	SP	Description			
511	A-2006-795-A	o	MOUNTED CIRCUIT BOARD,AU-172			
8pcs	1-540-122-11	o	SOCKET,SIL 2P			
C1	1-102-963-00	s	CERAMIC	33pF	5%	50V
C2	1-126-301-11	s	ELECT	1uF	20%	50V
C3	1-102-110-00	s	CERAMIC	220pF	10%	50V
C4	1-124-589-11	s	ELECT	47uF	20%	16V
C5	1-124-257-00	s	ELECT	2.2uF	20%	50V
C6	1-102-973-00	s	CERAMIC	100pF	5%	50V
C7	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C8	1-107-597-11	s	CERAMIC	22pF	5%	500V
C21	1-102-963-00	s	CERAMIC	33pF	5%	50V
C22	1-126-301-11	s	ELECT	1uF	20%	50V
C23	1-102-110-00	s	CERAMIC	220pF	10%	50V
C24	1-124-589-11	s	ELECT	47uF	20%	16V
C25	1-124-257-00	s	ELECT	2.2uF	20%	50V
C26	1-102-973-00	s	CERAMIC	100pF	5%	50V
C27	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C28	1-107-597-11	s	CERAMIC	22pF	5%	500V
C41	1-102-963-00	s	CERAMIC	33pF	5%	50V
C42	1-126-301-11	s	ELECT	1uF	20%	50V
C43	1-102-110-00	s	CERAMIC	220pF	10%	50V
C44	1-124-589-11	s	ELECT	47uF	20%	16V
C45	1-124-257-00	s	ELECT	2.2uF	20%	50V
C46	1-102-973-00	s	CERAMIC	100pF	5%	50V
C47	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C48	1-107-597-11	s	CERAMIC	22pF	5%	500V
C49	1-107-612-11	s	CERAMIC	100pF	5%	500V
C61	1-102-963-00	s	CERAMIC	33pF	5%	50V
C62	1-126-301-11	s	ELECT	1uF	20%	50V
C63	1-102-110-00	s	CERAMIC	220pF	10%	50V
C64	1-124-589-11	s	ELECT	47uF	20%	16V
C65	1-124-257-00	s	ELECT	2.2uF	20%	50V
C66	1-102-973-00	s	CERAMIC	100pF	5%	50V
C67	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C68	1-107-597-11	s	CERAMIC	22pF	5%	500V
C69	1-107-612-11	s	CERAMIC	100pF	5%	500V
C81	1-130-477-00	s	MYLAR	0.0033uF	5%	50V
C82	1-130-469-00	s	MYLAR	680pF	5%	50V
C83	1-130-012-00	s	FILM	330pF	5%	50V
C84	1-104-665-11	s	ELECT	100uF	20%	25V
C85	1-136-270-11	s	FILM	47pF	5%	630V
C86	1-107-504-11	s	CERAMIC	10pF	0.5pF	500V
C87	1-124-589-11	s	ELECT	47uF	20%	16V
C88	1-104-665-11	s	ELECT	100uF	20%	25V
C89	1-104-665-11	s	ELECT	100uF	20%	25V
C101	1-102-963-00	s	CERAMIC	33pF	5%	50V
C102	1-126-301-11	s	ELECT	1uF	20%	50V
C103	1-102-110-00	s	CERAMIC	220pF	10%	50V
C104	1-124-589-11	s	ELECT	47uF	20%	16V
C105	1-124-257-00	s	ELECT	2.2uF	20%	50V
C106	1-102-973-00	s	CERAMIC	100pF	5%	50V
C107	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C108	1-107-597-11	s	CERAMIC	22pF	5%	500V
C121	1-102-963-00	s	CERAMIC	33pF	5%	50V
C122	1-126-301-11	s	ELECT	1uF	20%	50V
C123	1-102-110-00	s	CERAMIC	220pF	10%	50V
C124	1-124-589-11	s	ELECT	47uF	20%	16V

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
C125	1-124-257-00	s	ELECT	2.2uF	20%	50V
C126	1-102-973-00	s	CERAMIC	100pF	5%	50V
C127	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C128	1-107-597-11	s	CERAMIC	22pF	5%	500V
C141	1-102-963-00	s	CERAMIC	33pF	5%	50V
C142	1-126-301-11	s	ELECT	1uF	20%	50V
C143	1-102-110-00	s	CERAMIC	220pF	10%	50V
C144	1-124-589-11	s	ELECT	47uF	20%	16V
C145	1-124-257-00	s	ELECT	2.2uF	20%	50V
C146	1-102-973-00	s	CERAMIC	100pF	5%	50V
C147	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C148	1-107-597-11	s	CERAMIC	22pF	5%	500V
C149	1-107-612-11	s	CERAMIC	100pF	5%	500V
C161	1-102-963-00	s	CERAMIC	33pF	5%	50V
C162	1-126-301-11	s	ELECT	1uF	20%	50V
C163	1-102-110-00	s	CERAMIC	220pF	10%	50V
C164	1-124-589-11	s	ELECT	47uF	20%	16V
C165	1-124-257-00	s	ELECT	2.2uF	20%	50V
C166	1-102-973-00	s	CERAMIC	100pF	5%	50V
C167	1-130-471-00	s	MYLAR	0.001uF	5%	50V
C168	1-107-597-11	s	CERAMIC	22pF	5%	500V
C169	1-107-612-11	s	CERAMIC	100pF	5%	500V
C181	1-130-477-00	s	MYLAR	0.0033uF	5%	50V
C182	1-130-469-00	s	MYLAR	680pF	5%	50V
C183	1-130-012-00	s	FILM	330pF	5%	50V
C184	1-104-665-11	s	ELECT	100uF	20%	25V
C185	1-136-270-11	s	FILM	47pF	5%	630V
C186	1-107-504-11	s	CERAMIC	10pF	0.5pF	500V
CN1	1-560-470-00	o	PIN,CONNECTOR 8P			
CN2	1-560-472-00	o	PIN,CONNECTOR 12P			
CN3	1-560-472-00	o	PIN,CONNECTOR 12P			
CN4	1-560-469-00	o	PIN,CONNECTOR 6P			
CN5	1-560-456-00	o	PIN,CONNECTOR 2P			
CT1	1-141-297-11	s	CAP,TRIMMER 90pF			
CT21	1-141-297-11	s	CAP,TRIMMER 90pF			
CT41	1-141-297-11	s	CAP,TRIMMER 90pF			
CT61	1-141-297-11	s	CAP,TRIMMER 90pF			
CT101	1-141-297-11	s	CAP,TRIMMER 90pF			
CT121	1-141-297-11	s	CAP,TRIMMER 90pF			
CT141	1-141-297-11	s	CAP,TRIMMER 90pF			
CT161	1-141-297-11	s	CAP,TRIMMER 90pF			
D81	8-719-200-02	s	DIODE 10E2			
D181	8-719-200-02	s	DIODE 10E2			
FL1	1-409-407-11	s	COIL,BIAS TRAP			
FL21	1-409-407-11	s	COIL,BIAS TRAP			
FL41	1-409-407-11	s	COIL,BIAS TRAP			
FL61	1-409-407-11	s	COIL,BIAS TRAP			
FL101	1-409-407-11	s	COIL,BIAS TRAP			
FL121	1-409-407-11	s	COIL,BIAS TRAP			
FL141	1-409-407-11	s	COIL,BIAS TRAP			
FL161	1-409-407-11	s	COIL,BIAS TRAP			
IC1	8-759-900-72	s	IC NE5532P			
IC41	8-759-900-72	s	IC NE5532P			
IC101	8-759-900-72	s	IC NE5532P			
IC141	8-759-900-72	s	IC NE5532P			

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
L81	1-410-311-11	s	COIL(SHIELD TYPE)
L181	1-410-311-11	s	COIL(SHIELD TYPE)
LV1	1-410-310-11	s	COIL,VARIABLE
LV21	1-410-310-11	s	COIL,VARIABLE
LV41	1-410-310-11	s	COIL,VARIABLE
LV61	1-410-310-11	s	COIL,VARIABLE
LV81	1-424-371-11	s	COIL
LV101	1-410-310-11	s	COIL,VARIABLE
LV121	1-410-310-11	s	COIL,VARIABLE
LV141	1-410-310-11	s	COIL,VARIABLE
LV161	1-410-310-11	s	COIL,VARIABLE
LV181	1-424-371-11	s	COIL
Q81	8-729-140-96	s	TRANSISTOR 2SD774-34
Q82	8-729-140-93	s	TRANSISTOR 2SB733-34
Q83	8-729-199-82	s	TRANSISTOR 2SD998-L
Q181	8-729-140-96	s	TRANSISTOR 2SD774-34
Q182	8-729-140-93	s	TRANSISTOR 2SB733-34
Q183	8-729-199-82	s	TRANSISTOR 2SD998-L
R1	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R2	1-249-417-11	s	CARBON 1K 5% 1/4W
R3	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R4	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R5	1-249-429-11	s	CARBON 10K 5% 1/4W
R6	1-249-409-11	s	CARBON 220 5% 1/4W
R7	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R8	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R10	1-249-393-11	s	CARBON 10 5% 1/4W
R21	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R22	1-249-417-11	s	CARBON 1K 5% 1/4W
R23	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R24	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R25	1-249-429-11	s	CARBON 10K 5% 1/4W
R26	1-249-409-11	s	CARBON 220 5% 1/4W
R27	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R28	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R30	1-249-393-11	s	CARBON 10 5% 1/4W
R41	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R42	1-249-417-11	s	CARBON 1K 5% 1/4W
R43	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R44	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R45	1-249-429-11	s	CARBON 10K 5% 1/4W
R46	1-249-409-11	s	CARBON 220 5% 1/4W
R47	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R48	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R50	1-249-393-11	s	CARBON 10 5% 1/4W
R61	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R62	1-249-417-11	s	CARBON 1K 5% 1/4W
R63	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R64	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R65	1-249-429-11	s	CARBON 10K 5% 1/4W
R66	1-249-409-11	s	CARBON 220 5% 1/4W
R67	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R68	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R70	1-249-393-11	s	CARBON 10 5% 1/4W
R81	1-249-430-11	s	CARBON 12K 5% 1/4W
R82	1-249-399-11	s	CARBON 33 5% 1/4W
R83	1-249-385-11	s	CARBON 2.2 5% 1/4W
R84	1-249-385-11	s	CARBON 2.2 5% 1/4W

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R85	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R86	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R87	1-217-638-21	s	FUSIBLE 1.5 5% 1/4W
R88	1-249-429-11	s	CARBON 10K 5% 1/4W
R89	1-249-441-11	s	CARBON 100K 5% 1/4W
R90	1-249-393-11	s	CARBON 10 5% 1/4W
R91	1-249-439-11	s	CARBON 68K 5% 1/4W
R92	1-249-393-11	s	CARBON 10 5% 1/4W
R101	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R102	1-249-417-11	s	CARBON 1K 5% 1/4W
R103	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R104	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R105	1-249-429-11	s	CARBON 10K 5% 1/4W
R106	1-249-409-11	s	CARBON 220 5% 1/4W
R107	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R108	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R110	1-249-393-11	s	CARBON 10 5% 1/4W
R121	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R122	1-249-417-11	s	CARBON 1K 5% 1/4W
R123	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R124	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R125	1-249-429-11	s	CARBON 10K 5% 1/4W
R126	1-249-409-11	s	CARBON 220 5% 1/4W
R127	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R128	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R130	1-249-393-11	s	CARBON 10 5% 1/4W
R141	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R142	1-249-417-11	s	CARBON 1K 5% 1/4W
R143	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R144	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R145	1-249-429-11	s	CARBON 10K 5% 1/4W
R146	1-249-409-11	s	CARBON 220 5% 1/4W
R147	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R148	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R150	1-249-393-11	s	CARBON 10 5% 1/4W
R161	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R162	1-249-417-11	s	CARBON 1K 5% 1/4W
R163	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R164	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R165	1-249-429-11	s	CARBON 10K 5% 1/4W
R166	1-249-409-11	s	CARBON 220 5% 1/4W
R167	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R168	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R170	1-249-393-11	s	CARBON 10 5% 1/4W
R181	1-249-430-11	s	CARBON 12K 5% 1/4W
R182	1-249-399-11	s	CARBON 33 5% 1/4W
R183	1-249-385-11	s	CARBON 2.2 5% 1/4W
R184	1-249-385-11	s	CARBON 2.2 5% 1/4W
R185	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R186	1-249-421-11	s	CARBON 2.2K 5% 1/4W
R187	1-217-638-21	s	FUSIBLE 1.5 5% 1/4W
R188	1-249-429-11	s	CARBON 10K 5% 1/4W
R189	1-249-441-11	s	CARBON 100K 5% 1/4W
R190	1-249-393-11	s	CARBON 10 5% 1/4W
R191	1-249-439-11	s	CARBON 68K 5% 1/4W
R192	1-249-393-11	s	CARBON 10K 5% 1/4W

(AU-172 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
RV1	1-230-523-11	s	RES,ADJ,METAL 10K
RV21	1-230-523-11	s	RES,ADJ,METAL 10K
RV41	1-230-523-11	s	RES,ADJ,METAL 10K
RV61	1-230-523-11	s	RES,ADJ,METAL 10K
RV101	1-230-523-11	s	RES,ADJ,METAL 10K
RV121	1-230-523-11	s	RES,ADJ,METAL 10K
RV141	1-230-523-11	s	RES,ADJ,METAL 10K
RV161	1-230-523-11	s	RES,ADJ,METAL 10K
RY81	1-515-683-11	s	RELAY
RY82	1-515-683-11	s	RELAY
RY181	1-515-683-11	s	RELAY
RY182	1-515-683-11	s	RELAY
T81	1-433-397-13	s	TRANSFORMER,BIAS OSCILLATION
T181	1-433-397-13	s	TRANSFORMER,BIAS OSCILLATION

CN-14(M) BOARD

Ref. No. or Q'ty	Part No.	SP	Description
171	1-634-869-11	o	PRINTED CIRCUIT BOARD,CN-14
CN6	1-562-090-00	s	JACK 13P

EX-357 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
191	1-643-620-11	o	PRINTED CIRCUIT BOARD,EX-357

EX-4 BOARD

Ref. No. or Q'ty	Part No.	SP	Description			
531	1-634-868-11	o	PRINTED CIRCUIT BOARD,EX-4			
1pc	3-164-252-01	o	HEAT SINK			
5pcs	7-682-547-09	s	SCREW +B 3x6			
C31	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C32	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C33	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C34	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C35	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C36	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C37	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C38	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C39	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C40	1-130-495-00	s	MYLAR	0.1uF	5%	50V
IC1	8-759-701-79	s	IC NJM7812FA			
IC2	8-759-701-88	s	IC NJM7912FA			
IC3	8-759-701-75	s	IC NJM7805FA			
IC4	8-759-701-75	s	IC NJM7805FA			
IC7	8-759-701-79	s	IC NJM7812FA			

LED-5(M) BOARD

Ref. No. or Q'ty	Part No.	SP	Description
551	1-633-867-13	o	PRINTED CIRCUIT BOARD,LED-5
D1	8-719-313-21	s	LED SEL1321G,GRN

MT-74 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
541	A-2029-101-A	o	MOUNTED CIRCUID BOARD,MT-74
C1	1-102-961-00	s	CERAMIC 27pF 5% 50V
C2	1-124-589-11	s	ELECT 47uF 20% 16V
C3	1-126-301-11	s	ELECT 1uF 20% 50V
C4	1-130-479-00	s	MYLAR 0.0047uF 5% 50V
C5	1-124-589-11	s	ELECT 47uF 20% 16V
C6	1-126-301-11	s	ELECT 1uF 20% 50V
C7	1-126-301-11	s	ELECT 1uF 20% 50V
C21	1-102-961-00	s	CERAMIC 27pF 5% 50V
C22	1-124-589-11	s	ELECT 47uF 20% 16V
C23	1-126-301-11	s	ELECT 1uF 20% 50V
C24	1-130-479-00	s	MYLAR 0.0047uF 5% 50V
C25	1-124-589-11	s	ELECT 47uF 20% 16V
C26	1-126-301-11	s	ELECT 1uF 20% 50V
C27	1-126-301-11	s	ELECT 1uF 20% 50V
C41	1-102-961-00	s	CERAMIC 27pF 5% 50V
C42	1-124-589-11	s	ELECT 47uF 20% 16V
C43	1-126-301-11	s	ELECT 1uF 20% 50V
C44	1-130-479-00	s	MYLAR 0.0047uF 5% 50V
C45	1-124-589-11	s	ELECT 47uF 20% 16V
C46	1-126-301-11	s	ELECT 1uF 20% 50V
C47	1-126-301-11	s	ELECT 1uF 20% 50V
C61	1-102-961-00	s	CERAMIC 27pF 5% 50V
C62	1-124-589-11	s	ELECT 47uF 20% 16V
C63	1-126-301-11	s	ELECT 1uF 20% 50V
C64	1-130-479-00	s	MYLAR 0.0047uF 5% 50V
C65	1-124-589-11	s	ELECT 47uF 20% 16V
C66	1-126-301-11	s	ELECT 1uF 20% 50V
C67	1-126-301-11	s	ELECT 1uF 20% 50V
CN2	1-560-463-00	o	PIN,CONNECTOR 8P
D1	8-719-101-61	s	DIODE RD6.2EL
D2	8-719-946-36	s	D56DE G3112F9
D21	8-719-101-61	s	DIODE RD6.2EL2
D22	8-719-946-39	s	DIODE GL112F9
D41	8-719-101-61	s	DIODE RD6.2EL2
D42	8-719-946-39	s	DIODE GL112F9
D61	8-719-101-61	s	DIODE RD6.2EL2
D62	8-719-946-39	s	DIODE GL112F9
IC1	8-759-100-06	s	IC UPC4556C
IC2	8-759-945-01	s	IC IR2E30
IC22	8-759-945-01	s	IC IR2E30
IC41	8-759-100-06	s	IC UPC4556C
IC42	8-759-945-01	s	IC IR2E30
IC62	8-759-945-01	s	IC IR2E30
R1	1-247-855-31	s	CARBON 10K 5% 1/4W
R2	1-247-855-31	s	CARBON 10K 5% 1/4
R3	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R4	1-249-397-11	s	CARBON 22 5% 1/4W
R5	1-249-440-11	s	CARBON 82K 5% 1/4W
R6	1-249-426-11	s	CARBON 5.6K 5% 1/4W
R7	1-249-431-11	s	CARBON 15K 5% 1/4W
R21	1-247-855-31	s	CARBON 10K 5% 1/4W
R22	1-247-855-31	s	CARBON 10K 5% 1/4W
R23	1-212-869-00	s	FUSIBLE 33 5% 1/4W

(MT-74 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R24	1-249-397-11	s	CARBON 22 5% 1/4W
R25	1-249-440-11	s	CARBON 82K 5% 1/4W
R26	1-249-426-11	s	CARBON 5.6K 5% 1/4W
R27	1-249-431-11	s	CARBON 15K 5% 1/4W
R41	1-247-855-31	s	CARBON 10K 5% 1/4W
R42	1-247-855-31	s	CARBON 10K 5% 1/4W
R43	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R44	1-249-397-11	s	CARNON 22 5% 1/4W
R45	1-249-440-11	s	CARBON 82K 5% 1/4W
R46	1-249-426-11	s	CARBON 5.6K 5% 1/4W
R47	1-249-431-11	s	CARBON 15K 5% 1/4W
R61	1-247-855-31	s	CARBON 10K 5% 1/4W
R62	1-247-855-31	s	CARBON 10K 5% 1/4W
R63	1-212-869-00	s	FUSIBLE 33 5% 1/4W
R64	1-249-397-11	s	CARBON 22 5% 1/4W
R65	1-249-440-11	s	CARBON 82K 5% 1/4W
R66	1-249-426-11	s	CARBON 5.6K 5% 1/4W
R67	1-249-431-11	s	CARBON 15K 5% 1/4W
R80	1-249-416-11	s	CARBON 820 5% 1/4W
RV1	1-241-059-11	s	RES,VAR,CARBON 10K
S41	1-554-667-31	s	SWITCH,SLIDE

SW-7 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
161	1-634-859-11	s	PRINTED CIRCUIT BOARD,SW-7
CN1	1-560-465-00	o	PIN,CONNECTOR 12P
D2	8-719-311-21	s	DIODE SEL1121R
D3	8-719-311-21	s	DIODE SEL1121R
D4	8-719-311-21	s	DIODE SEL1121R
D5	8-719-311-21	s	DIODE SEL1121R
D6	8-719-311-21	s	DIODE SEL1121R
S1	1-554-937-11	s	SWITCH,PUSH
S2	1-554-937-11	s	SWITCH,PUSH
S3	1-554-937-11	s	SWITCH,PUSH
S4	1-554-937-00	s	SWITCH,PUSH
S5	1-554-481-00	s	SWITCH,SLIDE

SY-3(M) BOARD

Ref. No. or Q'ty	Part No.	SP	Description
521	A-2019-223-A	o	MOUNTED CIRCUIT BOARD,SY-3(M)
6pcs	1-533-189-11	s	HOLDER,FUSE
BZ501	1-529-069-11	s	BUZZER,PIEZOELECTRIC
C1	1-126-256-11	s	ELECT 4700uF 20% 35V
C2	1-126-256-11	s	ELECT 4700uF 20% 35V
C3	1-126-256-11	s	ELECT 4700uF 20% 35V
C4	1-124-360-00	s	ELECT 1000uF 20% 16V
C5	1-124-618-11	s	ELECT 2200uF 20% 35V
C6	1-124-618-11	s	ELECT 2200uF 20% 35V
C7	1-124-618-11	s	ELECT 2200uF 20% 35V
C8	1-124-477-11	s	ELECT 47uF 20% 25V
C9	1-124-477-11	s	ELECT 47uF 20% 25V
C10	1-124-477-11	s	ELECT 47uF 20% 25V
C11	1-124-477-11	s	ELECT 47uF 20% 25V
C12	1-124-477-11	s	ELECT 47uF 20% 25V
C13	1-161-057-00	s	CERAMIC 0.033uF 10% 50V
C14	1-102-962-00	s	CERAMIC 30pF 5% 50V
C15	1-102-962-00	s	CERAMIC 30pF 5% 50V
C16	1-124-477-11	s	ELECT 47uF 20% 25V
C17	1-124-477-11	s	ELECT 47uF 20% 25V
C18	1-124-477-11	s	ELECT 47uF 20% 25V
C19	1-124-477-11	s	ELECT 47uF 20% 25V
C20	1-124-477-11	s	ELECT 47uF 20% 25V
C21	1-161-057-00	s	CERAMIC 0.033uF 10% 50V
C22	1-124-618-11	s	ELECT 2200uF 20% 35V
C23	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C41	1-130-495-00	s	MYLAR 0.1uF 5% 50V
C42	1-130-495-00	s	MYLAR 0.1uF 5% 50V
C51	1-124-618-11	s	ELECT 2200uF 20% 35V
C52	1-124-360-00	s	ELECT 1000uF 20% 16V
C61	1-130-495-11	s	MYLAR 0.1uF 5% 50V
C62	1-130-495-11	s	MYLAR 0.1uF 5% 50V
C101	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C102	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C103	1-124-471-00	s	ELECT 1000uF 20% 6.3V
C201	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C202	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C203	1-124-471-00	s	ELECT 1000uF 20% 6.3V
C301	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C302	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C303	1-124-471-00	s	ELECT 1000uF 20% 6.3V
C401	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C402	1-130-487-00	s	MYLAR 0.022uF 5% 50V
C403	1-124-471-00	s	ELECT 1000uF 20% 6.3V
CF1	1-567-875-11	s	VIBRATOR,CERAMIC
CN1	1-564-242-00	o	PIN,CONNECTOR 5P
CN2	1-508-736-00	o	PIN,CONNECTOR 10P
CN4	1-564-320-00	s	PIN,CONNECTOR (B2P-VH) 2P
CN6	1-560-470-00	o	PIN,CONNECTOR 8P
CN101	1-560-469-00	o	PIN,CONNECTOR 6P
CN201	1-560-469-00	o	PIN,CONNECTOR 6P
CN301	1-560-469-00	o	PIN,CONNECTOR 6P
CN401	1-560-469-00	o	PIN,CONNECTOR 6P
CN502	1-560-466-00	o	PIN,CONNECTOR 3P

(SY-3(M) BOARD)

Ref. No or Q'ty	Part No.	SP	Description
D1	8-719-505-60	s	DIODE S5VB60
D2	8-719-505-60	s	DIODE S5VB60
D3	8-719-200-02	s	DIODE 10E2
D4	8-719-200-02	s	DIODE 10E2
D5	8-719-911-19	s	DIODE 1SS119
D6	8-719-911-19	s	DIODE 1SS119
D7	8-719-200-02	s	DIODE 10E2
D101	8-719-200-02	s	DIODE 10E2
D102	8-719-911-19	s	DIODE 1SS119
D103	8-719-911-19	s	DIODE 1SS119
D104	8-719-911-19	s	DIODE 1SS119
D201	8-719-200-02	s	DIODE 10E2
D202	8-719-911-19	s	DIODE 1SS119
D203	8-719-911-19	s	DIODE 1SS119
D204	8-719-911-19	s	DIODE 1SS119
D301	8-719-200-02	s	DIODE 10E2
D302	8-719-911-19	s	DIODE 1SS119
D303	8-719-911-19	s	DIODE 1SS119
D304	8-719-911-19	s	DIODE 1SS119
D401	8-719-200-02	s	DIODE 10E2
D402	8-719-911-19	s	DIODE 1SS119
D403	8-719-911-19	s	DIODE 1SS119
D404	8-719-911-19	s	DIODE 1SS119
D502	8-719-911-19	s	DIODE 1SS119
D503	8-719-911-19	s	DIODE 1SS119
D504	8-719-911-19	s	DIODE 1SS119
D505	8-719-911-19	s	DIODE 1SS119
IC5	8-759-913-42	s	IC PST520C-2
IC6	8-759-635-02	s	IC M50747SP-C42SP
IC8	8-759-701-75	s	IC NJM7805FA
IC101	8-759-984-03	s	IC LM339N
IC201	8-759-984-03	s	IC LM339N
IC301	8-759-984-03	s	IC LM339N
IC401	8-759-984-03	s	IC LM339N
PS1	1-532-637-00	s	LINK,IC 1.0A
PS2	1-532-679-21	s	LINK,IC
Q1	8-729-900-80	s	TRANSISTOR DTC114ES
Q2	8-729-199-82	s	TRANSISTOR 2SD998-L
Q4	8-729-900-80	s	TRANSISTOR DTC114ES
Q5	8-729-900-80	s	TRANSISTOR DTC114ES
Q6	8-729-900-80	s	TRANSISTOR DTC114ES
Q102	8-729-140-93	s	TRANSISTOR 2SB733-34
Q103	8-729-900-61	s	TRANSISTOR DTA114ES
Q104	8-729-900-61	s	TRANSISTOR DTA114ES
Q112	8-729-140-93	s	TRANSISTOR 2SB733-34
Q113	8-729-900-61	s	TRANSISTOR DTA114ES
Q114	8-729-900-61	s	TRANSISTOR DTA114ES
Q121	8-729-900-61	s	TRANSISTOR DTA114ES
Q122	8-729-140-96	s	TRANSISTOR 2SD774-34
Q123	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q202	8-729-140-93	s	TRANSISTOR 2SB733-34
Q203	8-729-900-61	s	TRANSISTOR DTA114ES
Q204	8-729-900-61	s	TRANSISTOR DTA114ES
Q212	8-729-140-93	s	TRANSISTOR 2SB733-34
Q213	8-729-900-61	s	TRANSISTOR DTA114ES

(SY-3(M) BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
Q214	8-729-900-61	s	TRANSISTOR DTA114ES
Q221	8-729-900-61	s	TRANSISTOR DTA114ES
Q222	8-729-140-96	s	TRANSISTOR 2SD774-34
Q223	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q302	8-729-140-93	s	TRANSISTOR 2SB733-34
Q303	8-729-900-61	s	TRANSISTOR DTA114ES
Q304	8-729-900-61	s	TRANSISTOR DTA114ES
Q312	8-729-140-93	s	TRANSISTOR 2SB733-34
Q313	8-729-900-61	s	TRANSISTOR DTA114ES
Q314	8-729-900-61	s	TRANSISTOR DTA114ES
Q321	8-729-900-61	s	TRANSISTOR DTA114ES
Q322	8-729-140-96	s	TRANSISTOR 2SD774-34
Q323	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q402	8-729-140-93	s	TRANSISTOR 2SB733-34
Q403	8-729-900-61	s	TRANSISTOR DTA114ES
Q404	8-729-900-61	s	TRANSISTOR DTA114ES
Q412	8-729-140-93	s	TRANSISTOR 2SB733-34
Q413	8-729-900-61	s	TRANSISTOR DTA114ES
Q414	8-729-900-61	s	TRANSISTOR DTA114ES
Q421	8-729-900-61	s	TRANSISTOR DTA114ES
Q422	8-729-140-96	s	TRANSISTOR 2SD774-34
Q423	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q501	8-729-900-80	s	TRANSISTOR DTC114ES
Q502	8-729-900-61	s	TRANSISTOR DTA114ES
Q503	8-729-900-61	s	TRANSISTOR DTA114ES
Q504	8-729-900-61	s	TRANSISTOR DTA114ES
Q505	8-729-900-61	s	TRANSISTOR DTA114ES
R1	1-249-441-11	s	CARBON 100K 5% 1/4W
R2	1-249-416-11	s	CARBON 820 5% 1/4W
R3	1-249-416-11	s	CARBON 820 5% 1/4W
R4	1-249-441-11	s	CARBON 100K 5% 1/4W
R5	1-249-429-11	s	CARBON 10K 5% 1/4W
R6	1-249-401-11	s	CARBON 47 5% 1/4W
R7	1-247-903-00	s	CARBON 1M 5% 1/4W
R8	1-249-429-11	s	CARBON 10K 5% 1/4W
R17	1-249-416-11	s	CARBON 820 5% 1/4W
R18	1-249-416-11	s	CARBON 820 5% 1/4W
R19	1-249-416-11	s	CARBON 820 5% 1/4W
R22	1-249-441-11	s	CARBON 100K 5% 1/4W
R102	1-249-417-11	s	CARBON 1K 5% 1/4W
R104	1-249-429-11	s	CARBON 10K 5% 1/4W
R105	1-249-396-11	s	CARBON 18 5% 1/4W
R112	1-249-417-11	s	CARBON 1K 5% 1/4W
R114	1-249-429-11	s	CARBON 10K 5% 1/4W
R115	1-249-416-11	s	CARBON 820 5% 1/4W
R116	1-249-429-11	s	CARBON 10K 5% 1/4W
R117	1-249-401-11	s	CARBON 47 5% 1/4W
R122	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R202	1-249-417-11	s	CARBON 1K 5% 1/4W
R204	1-249-429-11	s	CARBON 10K 5% 1/4W
R205	1-249-396-11	s	CARBON 18 5% 1/4W
R212	1-249-417-11	s	CARBON 1K 5% 1/4W
R214	1-249-429-11	s	CARBON 10K 5% 1/4W
R215	1-249-416-11	s	CARBON 820 5% 1/4W
R216	1-249-429-11	s	CARBON 10K 5% 1/4W
R217	1-249-401-11	s	CARBON 47 5% 1/4W
R222	1-249-425-11	s	CARBON 4.7K 5% 1/4W

(SY-3(M) BOARD)

Ref. No or Q'ty	Part No.	SP	Description
R302	1-249-417-11	s	CARBON 1K 5% 1/4W
R304	1-249-429-11	s	CARBON 10K 5% 1/4W
R305	1-249-396-11	s	CARBON 18 5% 1/4W
R312	1-249-417-11	s	CARBON 1K 5% 1/4W
R314	1-249-429-11	s	CARBON 10K 5% 1/4W
R315	1-249-416-11	s	CARBON 820 5% 1/4W
R316	1-249-429-11	s	CARBON 10K 5% 1/4W
R317	1-249-401-11	s	CARBON 47 5% 1/4W
R322	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R402	1-249-417-11	s	CARBON 1K 5% 1/4W
R404	1-249-429-11	s	CARBON 10K 5% 1/4W
R405	1-249-396-11	s	CARBON 18 5% 1/4W
R412	1-249-417-11	s	CARBON 1K 5% 1/4W
R414	1-249-429-11	s	CARBON 10K 5% 1/4W
R415	1-249-416-11	s	CARBON 820 5% 1/4W
R416	1-249-429-11	s	CARBON 10K 5% 1/4W
R417	1-249-401-11	s	CARBON 47 5% 1/4W
R422	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R501	1-249-429-11	s	CARBON 10K 5% 1/4W
R502	1-249-413-11	s	CARBON 470 5% 1/4W
R503	1-249-413-11	s	CARBON 470 5% 1/4W
R504	1-249-413-11	s	CARBON 470 5% 1/4W
R505	1-249-413-11	s	CARBON 470 5% 1/4W
R506	1-249-416-11	s	CARBON 820 5% 1/4W
R507	1-249-416-11	s	CARBON 820 5% 1/4W
R508	1-249-429-11	s	CARBON 10K 5% 1/4W
R509	1-249-416-11	s	CARBON 820 5% 1/4W
R510	1-249-416-11	s	CARBON 820 5% 1/4W
RB1	1-235-195-00	s	RES BLOCK 10Kx8
RB2	1-235-195-00	s	RES BLOCK 10Kx8
RB3	1-231-533-00	s	RES BLOCK 10Kx4

VR-148 BOARD

Ref. No or Q'ty	Part No.	SP	Description
181	1-643-619-11	o	PRINTED CIRCUIT BOARD,VR-148
RV1	1-421-059-11	o	RES,VAR,CARBON 10K

1)

No.	Part No.	SP	Description
11	X-3166-712-1	o	PANEL ASSY,METER
12	X-3166-713-1	o	PANEL ASSY,SWITCH
13	X-3162-347-1	o	PANEL ASSY,SIDE
15	3-151-905-12	o	HINGE,DOOR
20	3-162-415-01	o	WASHER,THRUST
22	3-164-239-01	o	BRACKET(RIGHT),PC BOARD
23	3-164-240-01	o	BRACKET(LEFT),PC BOARD
24	3-164-242-01	o	SPACER,SWITCH
25	3-164-261-01	o	PANEL,FRONT
26	3-164-262-12	o	PANEL,REAR
27	3-164-265-21	o	PANEL,CASSETTE
28	3-164-265-31	o	PANEL,CASSETTE
29	3-164-266-01	o	PLATE,BOTTOM
30	3-564-027-01	o	FELT,LIMITER
31	3-668-743-00	o	NUT,PLATE,ROLLER,PRECEDING
32	3-682-047-01	o	HOLDER(A),PC BOARD
33	3-176-199-01	o	BRACKET(RIGHT),PC BOARD
34	3-176-200-01	o	BRACKET(LEFT),PC BOARD
35	X-4809-908-9	s	FOOT,RUBBER
36	3-694-825-11	s	SCREW(M3)(STEP),SPECIAL HEAD
37	3-164-251-01	o	SUPPORT,PC BOARD
38	3-164-252-01	o	HEAT SINK
39	3-170-051-01	o	PLATE,SHIELD
40	3-164-260-01	o	FOOT

2)

No.	Part No.	SP	Description
42	A-2109-009-A	o	CAPSTAN(B) ASSY(COPY3)
	A-2109-011-A	o	CAPSTAN(C) ASSY(COPY4)
43	A-2109-011-A	o	CAPSTAN(C) ASSY(COPY1)
	A-2109-009-A	o	CAPSTAN(B) ASSY(COPY2)
44	X-3162-306-1	s	PINCH ROLLER ASSY
46	X-3162-343-1	o	PLATE ASSY,ADJUSTMENT,HEAD
47	X-3162-344-2	o	CHASSI(R) ASSY,HEAD(COPY1-4)
48	X-3162-348-1	o	TABLE(RIGHT) ASSY,REE
49	X-3162-349-1	o	TABLE(LEFT) ASSY,REEL
50	3-162-312-01	o	SPRING
51	3-162-345-02	o	HOOK,SPRING
52	3-162-399-01	s	SPRING
53	3-164-221-01	s	PULLEY,MOTOR
55	3-164-232-01	s	SPRING,COMPRESSION
56	3-164-233-01	o	SPACER,ERASE HEAD
57	3-164-234-02	o	BRACKET,BRUSH
58	3-164-235-01	o	RETAINER,BRUSH
59	3-164-236-01	o	SHAFT,PINCH ROLLER
60	3-164-237-01	o	SPRING,CASSETTE RETAINER
61	3-164-238-01	o	RETAINER(B),HEAD CHASSIS
62	3-164-241-01	o	BRACKET,STOPPER
63	3-164-243-01	s	BELT,CAPSTAN
64	3-164-244-01	s	STOPPER,HEAD CHASSIS
65	3-164-245-01	s	CUSHION,CHASSIS
66	3-164-246-01	o	RETAINER,CASSETTE
67	3-164-247-01	s	SPRING,CASSETTE RETAINER
68	3-164-248-01	o	RETAINER,CASSETTE
69	3-164-249-01	o	PLATE,SOLENOID
70	3-164-250-01	o	SHAFT,JOINT
71	3-164-259-01	o	CASSETTE,RETAINER
72	3-164-271-01	s	GUIDE,CASSETTE
73	3-164-272-02	s	BRUSH,ELECTROSTATIC PREVENTION
74	3-418-191-00	s	SCREW
75	3-165-191-01	s	SPRING,TENSION
76	3-491-131-00	s	ROLLER,HEAD CHASSIS
77	3-166-369-01	s	SPACER,HEAD
78	3-166-369-11	s	SPACER,HEAD
79	3-558-448-00	s	ROLLER,HEAD CHASSIS
80	3-576-837-00	s	CLAMP,LEAD
81	3-701-509-00	s	SET SCREW,DOUBLE CUP 3x8
82	7-621-770-67	s	SCREW(M2.6x6),(+)SPECIAL HEAD
83	7-671-112-01	s	STEEL,BALL
85	3-165-188-01	s	SPACER(1),ADJUSTMENT PLATE
87	3-165-189-02	s	SPACER(2),ADJUSTMENT PLATE
91	3-162-416-01	s	RING(SHAFT),RETAINING,C
92	3-701-439-21	s	WASHER

3)

PACKING MATERIAL

No.	Part No.	SP	Description
201	3-185-409-01	o	INDIVIDUAL CARTON
202	3-185-016-01	o	CUSHION

SUPPLIED ACCESSORIES

No.	Part No.	SP	Description
1set	X-3701-105-0	s	ROD ASSY,CLEANING,HEAD
1set	1-590-910-11	s	CORD SET,POWER
1pc	1-558-196-11	s	CORD,CONNECTION 13P
1pc	3-164-273-01	s	COVER,DUST
1pc	3-755-104-22	s	MANUAL,INSTRUCTION

SECTION 11
PARTS LIST

PARTS INFORMATION

(1) The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

(2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to improved parts and/or engineering changes or standardization of genuine parts.
This manual's exploded views and electrical spare parts list indicate the part numbers of the standardized genuine parts at the present.
Regarding engineering part changes by the engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with s in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with o will be processed, but allow for additional delivery time.

(4) Items with no part number and/or no description are not stocked because they are seldom required for routine service.

(5) All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

CN-14(S) BOARD

Ref. No. or Q'ty	Part No.	SP	Descriptin
171	1-634-869-11	o	PRINTED CIRCUIT BOARD,CN-14
CN6	1-562-090-00	s	JACK 13P
CN601	1-562-090-00	s	JACK 13P

LED-5 BOARD

Ref.No. or Q'ty	Part No.	SP	Description
551	A-2095-652-A	o	MOUNTED CIRCUIT BOARD,LED-5
D1	8-719-313-21	s	LED SEL1321G,GRN

SW-7(S) BOARD

Ref. No. or Q'ty	Part No.	SP	Description
161	1-634-859-11	o	PRINTED CIRCUIT BOARD,SW-7(S)
CN1	1-560-461-00	o	PIN,CONNECTOR 5P
D1	8-719-311-21	s	DIODE SEL1121R
D2	8-719-311-21	s	DIODE SEL1121R
D3	8-719-311-21	s	DIODE SEL1121R
D4	8-719-311-21	s	DIODE SEL1121R

SY-3(S) BOARD

Ref. No. or Q'ty	Part No.	SP	Descriptin			
521	A-2019-227-A	o	MOUNTED CIRCUIT BOARD,SY-3(S)			
6pcs	1-533-189-11	s	HOLDER,FUSE			
C1	1-126-256-11	s	ELECT	4700uF	20%	35V
C2	1-126-256-11	s	ELECT	4700uF	20%	35V
C3	1-126-256-11	s	ELECT	4700uF	20%	35V
C4	1-124-360-00	s	ELECT	1000uF	20%	16V
C5	1-124-618-11	s	ELECT	2200uF	20%	35V
C6	1-124-618-11	s	ELECT	2200uF	20%	35V
C7	1-124-618-11	s	ELECT	2200uF	20%	35V
C8	1-124-477-11	s	ELECT	47uF	20%	25V
C9	1-124-477-11	s	ELECT	47uF	20%	25V
C10	1-124-477-11	s	ELECT	47uF	20%	25V
C11	1-124-477-11	s	ELECT	47uF	20%	25V
C12	1-124-477-11	s	ELECT	47uF	20%	25V
C13	1-161-057-00	s	CERAMIC	0.033uF	10%	50V
C14	1-102-962-00	s	CERAMIC	30pF	5%	50V
C15	1-102-962-00	s	CERAMIC	30pF	5%	50V
C16	1-124-477-11	s	ELECT	47uF	20%	25V
C17	1-124-477-11	s	ELECT	47uF	20%	25V
C18	1-124-477-11	s	ELECT	47uF	20%	25V
C19	1-124-477-11	s	ELECT	47uF	20%	25V
C20	1-124-477-11	s	ELECT	47uF	20%	25V
C21	1-161-057-00	s	CERAMIC	0.033uF	10%	50V
C22	1-124-618-11	s	ELECT	2200uF	20%	35V
C23	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C41	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C42	1-130-495-00	s	MYLAR	0.1uF	5%	50V
C51	1-124-618-11	s	ELECT	2200uF	20%	35V
C52	1-124-360-00	s	ELECT	1000uF	20%	16V
C61	1-130-495-11	s	MYLAR	0.1uF	5%	50V
C62	1-130-495-11	s	MYLAR	0.1uF	5%	50V
C101	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C102	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C103	1-124-471-00	s	ELECT	1000uF	20%	6.3V
C201	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C202	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C203	1-124-471-00	s	ELECT	1000uF	20%	6.3V
C301	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C302	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C303	1-124-471-00	s	ELECT	1000uF	20%	6.3V
C401	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C402	1-130-487-00	s	MYLAR	0.022uF	5%	50V
C403	1-124-471-00	s	ELECT	1000uF	20%	6.3V
CF1	1-567-875-11	s	VIBRATOR,CERAMIC			
CN1	1-564-242-00	o	PIN,CONNECTOR 5P			
CN2	1-508-736-00	o	PIN,CONNECTOR 10P			
CN4	1-564-320-00	s	PIN,CONNECTOR (B2P-VH) 2P			
CN6	1-560-470-00	o	PIN,CONNECTOR 8P			
CN101	1-560-469-00	o	PIN,CONNECTOR 6P			
CN201	1-560-469-00	o	PIN,CONNECTOR 6P			
CN301	1-560-469-00	o	PIN,CONNECTOR 6P			
CN401	1-560-469-00	o	PIN,CONNECTOR 6P			
CN602	1-560-456-00	o	PIN,CONNECTOR 2P			
D1	8-719-505-60	s	DIODE S5VB60			
D2	8-719-505-60	s	DIODE S5VB60			
D3	8-719-200-02	s	DIODE 10E2			
D4	8-719-200-02	s	DIODE 10E2			
D5	8-719-911-19	s	DIODE 1SS119			

(SY-3(S) BOARD)

Ref. No. or Q'ty	Part No.	SP	Descriptin
D6	8-719-911-19	s	DIODE 1SS119
D7	8-719-200-02	s	DIODE 10E2
D101	8-719-200-02	s	DIODE 10E2
D102	8-719-911-19	s	DIODE 1SS119
D103	8-719-911-19	s	DIODE 1SS119
D104	8-719-911-19	s	DIODE 1SS119
D201	8-719-200-02	s	DIODE 10E2
D202	8-719-911-19	s	DIODE 1SS119
D203	8-719-911-19	s	DIODE 1SS119
D204	8-719-911-19	s	DIODE 1SS119
D301	8-719-200-02	s	DIODE 10E2
D302	8-719-911-19	s	DIODE 1SS119
D303	8-719-911-19	s	DIODE 1SS119
D304	8-719-911-19	s	DIODE 1SS119
D401	8-719-200-02	s	DIODE 10E2
D402	8-719-911-19	s	DIODE 1SS119
D403	8-719-911-19	s	DIODE 1SS119
D404	8-719-911-19	s	DIODE 1SS119
D601	8-719-911-19	s	DIODE 1SS119
D602	8-719-911-19	s	DIODE 1SS119
IC5	8-759-913-42	s	IC PST520C-2
IC6	8-759-635-02	s	IC M50747SP-C42SP
IC8	8-759-701-75	s	IC NJM7805FA
IC101	8-759-984-03	s	IC LM339N
IC201	8-759-984-03	s	IC LM339N
IC301	8-759-984-03	s	IC LM339N
IC401	8-759-984-03	s	IC LM339N
PS1	1-532-637-00	s	LINK,IC 1.0A
PS2	1-532-679-21	s	LINK,IC
Q1	8-729-900-80	s	TRANSISTOR DTC114ES
Q2	8-729-199-82	s	TRANSISTOR 2SD998-L
Q4	8-729-900-80	s	TRANSISTOR DTC114ES
Q5	8-729-900-80	s	TRANSISTOR DTC114ES
Q6	8-729-900-80	s	TRANSISTOR DTC114ES
Q102	8-729-140-93	s	TRANSISTOR 2SB733-34
Q103	8-729-900-61	s	TRANSISTOR DTA114ES
Q104	8-729-900-61	s	TRANSISTOR DTA114ES
Q112	8-729-140-93	s	TRANSISTOR 2SB733-34
Q113	8-729-900-61	s	TRANSISTOR DTA114ES
Q114	8-729-900-61	s	TRANSISTOR DTA114ES
Q121	8-729-900-61	s	TRANSISTOR DTA114ES
Q122	8-729-140-96	s	TRANSISTOR 2SD774-34
Q123	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q202	8-729-140-93	s	TRANSISTOR 2SB733-34
Q203	8-729-900-61	s	TRANSISTOR DTA114ES
Q204	8-729-900-61	s	TRANSISTOR DTA114ES
Q212	8-729-140-93	s	TRANSISTOR 2SB733-34
Q213	8-729-900-61	s	TRANSISTOR DTA114ES
Q214	8-729-900-61	s	TRANSISTOR DTA114ES
Q221	8-729-900-61	s	TRANSISTOR DTA114ES
Q222	8-729-140-96	s	TRANSISTOR 2SD774-34
Q223	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q302	8-729-140-93	s	TRANSISTOR 2SB733-34
Q303	8-729-900-61	s	TRANSISTOR DTA114ES
Q304	8-729-900-61	s	TRANSISTOR DTA114ES
Q312	8-729-140-93	s	TRANSISTOR 2SB733-34
Q313	8-729-900-61	s	TRANSISTOR DTA114ES
Q314	8-729-900-61	s	TRANSISTOR DTA114ES
Q321	8-729-900-61	s	TRANSISTOR DTA114ES

(SY-3(S) BOARD)

Ref. No. or Q'ty	Part No.	SP	Descriptin
Q322	8-729-140-96	s	TRANSISTOR 2SD774-34
Q323	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q402	8-729-140-93	s	TRANSISTOR 2SB733-34
Q403	8-729-900-61	s	TRANSISTOR DTA114ES
Q404	8-729-900-61	s	TRANSISTOR DTA114ES
Q412	8-729-140-93	s	TRANSISTOR 2SB733-34
Q413	8-729-900-61	s	TRANSISTOR DTA114ES
Q414	8-729-900-61	s	TRANSISTOR DTA114ES
Q421	8-729-900-61	s	TRANSISTOR DTA114ES
Q422	8-729-140-96	s	TRANSISTOR 2SD774-34
Q423	8-729-821-04	s	TRANSISTOR 2SA1317-STU
Q601	8-729-900-61	s	TRANSISTOR DTA114ES
Q602	8-729-900-80	s	TRANSISTOR DTC114ES
Q603	8-729-900-80	s	TRANSISTOR DTC114ES
Q604	8-729-900-80	s	TRANSISTOR DTC114ES
Q605	8-729-900-80	s	TRANSISTOR DTC114ES
Q606	8-729-900-80	s	TRANSISTOR DTC114ES
R1	1-249-441-11	s	CARBON 100K 5% 1/4W
R2	1-249-416-11	s	CARBON 820 5% 1/4W
R3	1-249-416-11	s	CARBON 820 5% 1/4W
R4	1-249-441-11	s	CARBON 100K 5% 1/4W
R5	1-249-429-11	s	CARBON 10K 5% 1/4W
R6	1-249-401-11	s	CARBON 47 5% 1/4W
R7	1-247-903-00	s	CARBON 1M 5% 1/4W
R8	1-249-429-11	s	CARBON 10K 5% 1/4W
R17	1-249-416-11	s	CARBON 820 5% 1/4W
R18	1-249-416-11	s	CARBON 820 5% 1/4W
R19	1-249-416-11	s	CARBON 820 5% 1/4W
R22	1-249-441-11	s	CARBON 100K 5% 1/4W
R102	1-249-417-11	s	CARBON 1K 5% 1/4W
R104	1-249-429-11	s	CARBON 10K 5% 1/4W
R105	1-249-396-11	s	CARBON 18 5% 1/4W
R112	1-249-417-11	s	CARBON 1K 5% 1/4W
R114	1-249-429-11	s	CARBON 10K 5% 1/4W
R115	1-249-416-11	s	CARBON 820 5% 1/4W
R116	1-249-429-11	s	CARBON 10K 5% 1/4W
R117	1-249-401-11	s	CARBON 47 5% 1/4W
R122	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R202	1-249-417-11	s	CARBON 1K 5% 1/4W
R204	1-249-429-11	s	CARBON 10K 5% 1/4W
R205	1-249-396-11	s	CARBON 18 5% 1/4W
R212	1-249-417-11	s	CARBON 1K 5% 1/4W
R214	1-249-429-11	s	CARBON 10K 5% 1/4W
R215	1-249-416-11	s	CARBON 820 5% 1/4W
R216	1-249-429-11	s	CARBON 10K 5% 1/4W
R217	1-249-401-11	s	CARBON 47 5% 1/4W
R222	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R302	1-249-417-11	s	CARBON 1K 5% 1/4W
R304	1-249-429-11	s	CARBON 10K 5% 1/4W
R305	1-249-396-11	s	CARBON 18 5% 1/4W
R312	1-249-417-11	s	CARBON 1K 5% 1/4W
R314	1-249-429-11	s	CARBON 10K 5% 1/4W
R315	1-249-416-11	s	CARBON 820 5% 1/4W
R316	1-249-429-11	s	CARBON 10K 5% 1/4W
R317	1-249-401-11	s	CARBON 47 5% 1/4W
R322	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R402	1-249-417-11	s	CARBON 1K 5% 1/4W
R404	1-249-429-11	s	CARBON 10K 5% 1/4W
R405	1-249-496-11	s	CARBON 18 5% 1/4W

(SY-3(S) BOARD)

Ref. No. or Q'ty	Part No.	SP	Descriptin
R412	1-249-417-11	s	CARBON 1K 5% 1/4W
R414	1-249-429-11	s	CARBON 10K 5% 1/4W
R415	1-249-416-11	s	CARBON 820 5% 1/4W
R416	1-249-429-11	s	CARBON 10K 5% 1/4W
R417	1-249-401-11	s	CARBON 47 5% 1/4W
R422	1-249-425-11	s	CARBON 4.7K 5% 1/4W
R601	1-249-413-11	s	CARBON 470 5% 1/4W
R606	1-249-429-11	s	CARBON 10K 5% 1/4W
R607	1-249-429-11	s	CARBON 10K 5% 1/4W
R608	1-249-429-11	s	CARBON 10K 5% 1/4W
R609	1-249-416-11	s	CARBON 820 5% 1/4W
R610	1-249-416-11	s	CARBON 820 5% 1/4W
RB1	1-235-195-00	s	RES BLOCK 10Kx8
RB2	1-235-195-00	s	RES BLOCK 10Kx8
RB3	1-231-533-00	s	RES BLOCK 10Kx4
RB601	1-231-533-00	s	RES BLOCK 10Kx4
S601	1-554-937-11	s	SWITCH,PUSH
S602	1-554-937-11	s	SWITCH,PUSH
S603	1-554-937-11	s	SWITCH,PUSH
S604	1-554-937-11	s	SWITCH,PUSH

151 AC-3 BOARD

SAME AS CCP-2300

501 AU-171 BOARD

SAME AS CCP-2300

511 AU-172 BOARD

SAME AS CCP-2300

531 EX-4 BOARD

SAME AS CCP-2300

FRAME No.	Part No.	SP	Description
101	1-533-189-11	s	HOLDER,FUSE
102	1-541-747-12	s	MOTOR,CAPSTAN
104	1-543-688-11	s	HEAD,MAGNETIC(RECORD)
105	1-543-707-11	s	HEAD,MAGNETIC(ERASE)
112	1-558-071-11	o	LEAD(WITH CONNECTOR) 8P(RECORD)
F1	⚠1-532-745-11	s	FUSE, GLASS TUBE 3.15A 125V (FOR U MODEL ONLY)
	⚠1-532-237-00	s	FUSE, TIME-LAG 3.15A 250V (FOR EK MODEL ONLY)
F2	⚠1-532-744-11	s	FUSE, GLASS TUBE 2.5A 125V (FOR U MODEL ONLY)
	⚠1-532-286-00	s	FUSE, TIME-LAG 2.5A 250V (FOR EK MODEL ONLY)
F3	⚠1-532-744-11	s	FUSE, GLASS TUBE 2.5A 125V (FOR U MODEL ONLY)
	⚠1-532-286-00	s	FUSE, TIME-LAG 2.5A 250V (FOR EK MODEL ONLY)
T1	⚠1-449-928-11	s	TRANSFORMER, POWER (FOR U MODEL ONLY)
	⚠1-426-983-11	s	TRANSFORMER, POWER (FOR EK MODEL ONLY)
S1	⚠1-570-744-21	s	SWITCH, AC, POWER
M100	1-541-163-51	s	MOTOR
M200	1-541-163-51	s	MOTOR
M300	1-541-163-51	s	MOTOR
M400	1-541-163-51	s	MOTOR
M110	1-541-766-12	s	MOTOR,DC
M210	1-541-766-12	s	MOTOR,DC
M310	1-541-766-12	s	MOTOR,DC
M410	1-541-766-12	s	MOTOR,DC
PM100	1-454-495-11	s	SOLENOID,PLUNGER
PM200	1-454-495-11	s	SOLENOID,PLUNGER
PM300	1-454-495-11	s	SOLENOID,PLUNGER
PM400	1-454-495-11	s	SOLENOID,PLUNGER

(SY-3 (S) BOARD)

Ref. No. or Q'ty	Part No.	SP	Description			
R304	1-249-429-11	s	CARBON	10K	5%	1/4W
R305	1-249-396-11	s	CARBON	18	5%	1/4W
R312	1-249-417-11	s	CARBON	1K	5%	1/4W
R314	1-249-429-11	s	CARBON	10K	5%	1/4W
R315	1-249-416-11	s	CARBON	820	5%	1/4W
R316	1-249-429-11	s	CARBON	10K	5%	1/4W
R317	1-249-401-11	s	CARBON	47	5%	1/4W
R322	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R402	1-249-417-11	s	CARBON	1K	5%	1/4W
R404	1-249-429-11	s	CARBON	10K	5%	1/4W
R405	1-249-396-11	s	CARBON	18	5%	1/4W
R412	1-249-417-11	s	CARBON	1K	5%	1/4W
R414	1-249-429-11	s	CARBON	10K	5%	1/4W
R415	1-249-416-11	s	CARBON	820	5%	1/4W
R416	1-249-429-11	s	CARBON	10K	5%	1/4W
R417	1-249-401-11	s	CARBON	47	5%	1/4W
R422	1-249-425-11	s	CARBON	4.7K	5%	1/4W
R601	1-249-413-11	s	CARBON	470	5%	1/4W
R606	1-249-429-11	s	CARBON	10K	5%	1/4W
R607	1-249-429-11	s	CARBON	10K	5%	1/4W
R608	1-249-429-11	s	CARBON	10K	5%	1/4W
R609	1-249-416-11	s	CARBON	820	5%	1/4W
R610	1-249-416-11	s	CARBON	820	5%	1/4W
RB1	1-235-195-00	s	RES BLOCK 10KX8			
RB2	1-235-195-00	s	RES BLOCK 10KX8			
RB3	1-231-533-00	s	RESISTOR BLOCK 10Kx4			
RB601	1-231-533-00	s	RESISTOR BLOCK 10Kx4			
S601	1-554-937-11	s	SWITCH, PUSH			
S602	1-554-937-11	s	SWITCH, PUSH			
S603	1-554-937-11	s	SWITCH, PUSH			
S604	1-554-937-11	s	SWITCH, PUSH			

SW-7 (S) BOARD

Ref. No. or Q'ty	Part No.	SP	Description
161	1-634-859-11	o	PC BOARD, SW-7
CN1	1-560-461-00	o	PIN, CONNECTOR 5P
D1	8-719-311-21	s	DIODE SEL1121R
D2	8-719-311-21	s	DIODE SEL1121R
D3	8-719-311-21	s	DIODE SEL1121R
D4	8-719-311-21	s	DIODE SEL1121R

FRAME

Ref. No. or Q'ty	Part No.	SP	Description
102	1-541-747-12	s	MOTOR, CAPSTAN
104	1-543-801-11	s	HEAD, MAGNETIC (REC)
105	1-543-707-11	s	HEAD, MAGNETIC
M100	1-541-766-11	s	MOTOR, DC
M200	1-541-766-11	s	MOTOR, DC
M300	1-541-766-11	s	MOTOR, DC
M400	1-541-766-11	s	MOTOR, DC
M110	1-541-163-00	s	MOTOR, DC
M210	1-541-163-00	s	MOTOR, DC
M310	1-541-163-00	s	MOTOR, DC
M410	1-541-163-00	s	MOTOR, DC
PM100	1-454-495-11	s	SOLENOID, PLUNGER
PM200	1-454-495-11	s	SOLENOID, PLUNGER
PM300	1-454-495-11	s	SOLENOID, PLUNGER
PM400	1-454-495-11	s	SOLENOID, PLUNGER
S1	⚠1-570-744-21	s	SWITCH, AC POWER
T1	⚠1-449-928-11	s	TRANSFORMER, POWER
	1-690-979-11	o	CABLE, CONNECTION 12P

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CCP-2400 (U)
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